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THE PRACTICE

OF

MEDICINE AND SURGERY.

THE PRACTICE

OF

MEDICINE AND SURGERY,

APPLIED TO THE

DISEASES AND ACCIDENTS INCIDENT TO WOMEN.

By W. H. BYFORD, A.M., M.D.,
PROFESSOR OF GYNÆCOLOGY IN RUSH MEDICAL COLLEGE, AND OF OBSTETRICS IN THE WOMAN'S
MEDICAL COLLEGE; SURGEON TO THE WOMAN'S HOSPITAL OF THE STATE OF ILLINOIS;
MEMBER AND PRESIDENT OF THE AMERICAN GYNÆCOLOGICAL SOCIETY;
MEMBER AND EX-VICE-PRESIDENT OF THE AMERICAN
MEDICAL ASSOCIATION, ETC.

THIRD EDITION.

THOROUGHLY REVISED AND REWRITTEN.

WITH

ONE HUNDRED AND SIXTY-FOUR ILLUSTRATIONS.

PHILADELPHIA:
LINDSAY & BLAKISTON.
1881.

7

Entered according to Act of Congress, in the year 1881,

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In the Office of the Librarian of Congress, at Washington, D. C

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1881

PREFACE TO THE THIRD EDITION.

THE second edition of this work was issued almost simultaneously with three Gynæcological works by authors who have become world-known and been quoted by all modern writers on diseases of women. That edition was soon exhausted, and the work has been out of print several years. The above-mentioned full supply of good books on the same subject led me to neglect my own for this long time. Many of my friends in the Western section of this country, and some in other portions have, however, so kindly and frequently urged me to produce another edition that I am persuaded it might be useful to the profession.

The rapid progress of medical science in the last decade, and especially that department to which this work is devoted, has made so many changes necessary that the present edition is almost a new book. New chapters and subjects have been introduced, and most of the old ones have been rewritten.

In many instances I have expressed opinions and counselled practice that differ greatly from the teachings of the last edition. This could not be otherwise, nor do I desire that it should. Surrounded as I have been by such a throng of active workers, the results of whose labors I have tried to assimilate, my former ideas have been necessarily greatly modified, and I hope also improved. While there is much new material introduced, the omission of puerperal diseases and diseases of the breasts enables the author to compress the work into about the same size as the last edition.

CHICAGO, August 1, 1881.

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DISEASES AND ACCIDENTS

INCIDENT TO WOMEN.

CHAPTER I.

DISEASES AND ACCIDENTS OF THE LABIA AND PERINÆUM.

Adhesion of the labia, and consequent occlusion of the vagina, sometimes occurs in infancy, or early childhood, as well as in adult life. The adhesions of infancy are so feeble and easily broken up, that they may be considered a trifling affair. Upon examining the parts, it will be found that there is no development of adhesive tissue, but the mucous membrane of the two sides is merely in strong coaptation. It probably is caused by the adhesive influence of mucus accumulating and drying between the parts, when in close contact, from want of cleanliness. The vaginal orifice is closed up to the urethra above, and down to the fourchette below. The treatment consists in separating the labia, by forcibly pressing each in opposite directions, until the adhesion gives way, washing and oiling them once a day afterwards to keep them from adhering again. Should we not be able to separate them in this way, the point of a silver catheter may be passed down so as to effect it. There will be no need of any other instruments in the case.

On one or two occasions I have seen firm tissual cohesions of the labia in childhood as the effect of ulcerative vulvar inflammation. This form of adhesions may be so firm as to require the use of the knife. They are, however, always superficial, and we may generally introduce a bent probe or director behind the adhesions from above. When this is the case, it is, I believe, the best plan to separate them, by drawing the bent director through the adherent part. The same care as in the infant will prevent them from adhering again.

The most grave adhesions we meet are in the adult, as the effect of neglected inflammation of the vulva after childbirth. These adhesions are sufficient entirely to close the vaginal orifice by the coaptation and firm accretion of the entire inner surfaces of the labia. I have met with more than one instance in which the hairy margins of the labia were so nicely adjusted to each other, that you could not distinguish the point of original separation, from the perinæum to the urethral orifice, and the finest probe would not enter the vagina anywhere. The depth of the adhesion may be very great, involving much of the vaginal cavity.

These cases are very embarrassing, and are seldom perfectly remedied. It is decidedly the best plan not to interfere with them until the menstrual accumulation fills up all the vaginal cavity remaining inadherent, and then our object should be to reach the accumulation with a small trocar as near the middle of the adherent parts as possible. Placing our patient in the lithotomy position, the catheter should be introduced into the urethra, the urine all drawn off, and the urethra held as near the symphysis pubis, or as far from the middle line of the vagina, as practicable. The catheter should be thus held by an assistant, while the forefinger of the left hand should be placed in the rectum. With this preparation we may safely introduce the trocar into the collection of fluid as felt by the finger. The fluid being drawn off, the outer extremity of the perforation may be increased by the knife as far as may be desired, and as deeply as the surgeon may consider it safe. The opening may be increased as much as necessary by wax or hard-rubber bougies. The whole cavity should be thoroughly cleansed by a syringe with soap and water. The size of the bougies should be increased as often as once in twenty-four hours. If the opening is superficial, the treatment will not be protracted; but if it is deep, it will be tedious. It should be continued until all danger of closure is past, and it will be best to keep the patient under our supervision for some time after this appears to be the case.

Wounds.

The labia are sometimes wounded by accidents of some kind extraneous to the patient, and they are sometimes torn during labor. When the wound is deep enough to reach the bulb of the clitoris, alarming and sometimes fatal hæmorrhage is the result. Professor Meigs gives an instance of great hæmorrhage from these parts in a woman who had fallen upon a chair so as to cut through one of the labia. A case of fatal hæmorrhage was caused in this city about four years since, in the following manner, as well as it could be learned from a legal investigation: A drunken husband returned home late at night, and, as was his wont under such circumstances, beat and kicked his wife, who was probably also inebriated. He kicked her with great violence in the genitals, and the square-toed heavy boot, in penetrating the pelvis, had cut off one labium and deeply wounded the other. In six or eight hours after the occurrence the woman was found dead, with such copious effusion of blood from the wounds as, in the opinion of the examining jury, to account for the fatal result. I saw a case many years ago, where the patient was wounded by a knife in one labium so as to cause very profuse hæmorrhage.

The hæmorrhage being the important effect of these wounds, our efforts should be directed to its suppresssion, and this may in most cases be easily accomplished. The bleeding part should be pressed by the hand firmly against the pubic ramus of the side upon which it is situated until temporarily arrested, when an elastic air-bag or plug of oiled cotton or lint, may be introduced to fill up the vagina, and a hard compress placed and held firmly by bandages, so as to press the wounded part between the two. When wounds of the labia are large and gaping, the hair should be removed, and the wound treated according to ordinary rules for external wounds. The rents occurring in labor do not, in the great majority of cases, require any special treatment, cleanliness and quiet being all that is required.

Sanguineous Infiltration.

During labor, when the parts are stretched to their utmost extent, some of the arterial twigs occasionally give way and extravasate the blood in the loose structure of one labium. The infiltration usually shows itself after the child has been delivered; but sometimes, before the head has passed, the swelling becomes very great, and proves an obstacle to the expulsion of the head. When this last is the case, the blood is effused from a large branch of the pubic artery, and the forcible injection into the tissues is so extensive as to fill a large part of the space between the vagina and the pelvic walls. This is a very serious state of affairs, and calls for prompt and judicious interference. I once saw, in consultation, a case of this kind, so extensive as to arrest labor for several hours. These effusions, however, do not always call for surgical treatment, but when, as in the case here alluded to, the effusion is extensive, we must make a free incision in the inner surface of the labium and allow the blood to escape; if it is coagulated, we should introduce the fingers and dislodge it. Water-dressing, some evaporating lotion or cooling discutient will be sufficient, and absorption will be effected in from one to four weeks. Suppuration occasionally, I think not frequently, is excited by a small amount of effusion. This should be treated as an abscess. If the amount of blood is great and the parts are tensely distended even after the child is expelled, it is better to liberate it by incision, for fear of sloughing or extensive suppuration and serious damage.

Varices of the Labia and Vulva.

This condition of the vulva may be of greater or less extent. Generally the varicosities are scattered about on the inner side of the greater labia; sometimes only one or two exist of any size, but occasionally one labium is permeated by large blue veins in every direction until they seem to have almost entirely replaced the other tissue.

When the venous enlargement is great there is danger of rupture and profuse hæmorrhage, even enough to bring about fatal results. The veins are especially large during pregnancy, and if wounded require prompt and energetic treatment. For the emergency, pressure on the point of rupture will enable us to immediately arrest the hæmorrhage. The ligature, however, will be necessary to secure the patient from an immediate repetition of the accident. This should be applied so as to completely control the loss. The radical cure requires the obliteration of the veins, effected in the same manner as elsewhere, by injection with the persulphate of iron, ligating with or without pins, etc. A radical cure should never be attempted in the absence of pregnancy, unless demanded by some great emergency.

Œdema.

The distensible nature of the structure of the labia renders them liable to great œdematous infiltration in cases of general dropsy. Ordinarily, such distension is a matter of trifling importance, but the supervention of labor at a time when they are very largely swollen is often an embarrassing condition. They are sometimes so swollen as to occlude the vaginal entrance, and yield only after protracted efforts, and even then, sometimes, only after one of them has been more or less torn. When excessive œdema is discovered before the head presses upon the external parts or even then, no time should be lost in taking measures to lessen their size. This may be best done by everting first one and then the other, and making from ten to twenty small punctures through the mucous membrane only. A very sharp-pointed knife, taken between the thumb and finger of the right hand, so as to show only about the eighth of an inch, is the best instrument. Several quick, smart strokes with the instrument thus held, suffice for the operation. The serum exudes from the punctures, and in half an hour the swelling is very much reduced.

Phlegmon.

Abscesses in the labia are apt to occur in three different forms. The first is common phlegmonous inflammation, occurring in the central part of one labium, very rarely in both. The heat, swelling, and pain are very great, and the inflammation runs its course quite rapidly, generally suppurating and discharging in from six to eight days. This form of inflammation results from bruises, acrid discharges from the vagina, or the extension of inflammation from that cavity. It is located about the centre of the labium, and the swelling and tenderness are great from the beginning. The *second form* originates in overdistension of Duverney's gland, from a stoppage of its excretory duct. It is situated deeply at the lower or posterior end of the labium, and generally more slow in its progress. If the patient is intelligent, and has observed the case with care, she will tell us that there was a little tumor in the seat of disease for several days, sometimes weeks, slightly tender at first, but gradually becoming more so until the abscess was fully formed. In this stage the labium is enlarged, tender, and hot, but there is not the acuteness of inflammation that is seen in the first variety. If the surgeon has an opportunity to examine the parts during the progress, he will perceive a well-defined tumor, pyriform in shape, with the small extremity directed to the vulva, while the larger passes beneath the ramus of the ischium. It will not seem to be, as it is not, in the central part of the labium, but beneath its under surface. It will bear handling somewhat freely, and by pressing against the ramus, and directing the pressure toward the vulvar end of it, the contents may sometimes be pressed out. The contents in the early stages are, for the most part, mucus. If examined later, the surrounding parts, the labium particularly, will be found in a state of phlegmonous inflammation, which, in ten days or two weeks, suppurates, and the pus is evacuated spontaneously. In this form of inflammation, if the duct of the gland can be opened before the inflammation becomes considerable, suppuration may be avoided. This may be done by pressing the fluid out, or introducing a very small probe into the canal of the gland, thus opening it. If these are both impracticable, it is better to puncture it and squeeze the contents through the outlet thus made. If inflammation has begun, we may treat it like the former variety, with leeches, purgatives, evaporating lotions, etc., in the earlier period, and afterwards by poultices and anodynes until the suppuration is complete, when it should be evacuated by puncturing it on the mucous surface of the labium. The *third variety* is characterized by a succession of small furunculi. They first show themselves as small points of induration immediately below the mucous membrane or skin, which are very tender, and in the course of a few days suppurate. One scarcely passes through these stages before it is succeeded by another, and thus a continuation of them prolongs the march for weeks, and even months, before they cease to return. This condition has existed only in such of my patients as were the subjects of some form of uterine disease, attended with leucorrhœa. They are generally anæmic, constipated, and dyspeptic. The radical treatment consists in curing the disease of the uterus, correcting the state of the bowels by mercurial and saline cathartics, and reinvigorating the patient by the judicious employment of tonics. We may palliate the sufferings of the patient by cleanliness, as bathing the parts thoroughly several times a day with pure cold water, and using cold-water injections per vaginam, and making such application to every hardened point as soon as it shows itself as will arrest its progress. I have used successfully the strong tincture of iodine applied to the part, and the solid nitrate of silver. If either of these applications is used as soon as the inflammation begins to come, sometimes it will be arrested, and the patient escape for several days, or until another begins to form. Should we be unable to thus cut short the inflammation, we must use poultices of bread mixed with a solution of acetate of lead, and anodynes, until suppuration is perfect. These small points of suppuration usually break themselves, and they will seldom be lanced. Notwithstanding the fact that inflammation of the labia is very painful, the patient will bear her distress until suppuration is complete, or at least unavoidable in almost all cases, so that our treatment is confined generally to that appropriate to the suppurative stage. The whole process of inflammation is rapid, so that this may be an additional reason why the first stage is not the subject of observation.

Abscesses of the Labia

Sometimes become chronic, especially such as find their origin in Huguier's gland. An interesting case of this kind is recorded in the *Gynæcological Journal* of Boston, second volume, page 136, by Dr. H. R. Storer:

"For many years the lady had found coitus almost impossible, owing to occlusion of vulvæ opening by lateral pressure. She was now several months pregnant, and the labial tumor was rapidly increasing. The tumor was very irregular in outline, with lobulations and depressions such as might easily have been occasioned by convolutions of intestine within a thin hernial sac. There were present many symptoms of strangulated hernia, and the patient's distress and local suffering were extreme. It was impossible, by the most careful examination, to make a positive differential diagnosis, though Dr. Storer was strongly inclined to believe it was a labial abscess of many years' standing, taking its rise from inflammatory obliteration of the duct of Huguier's gland. He cut carefully down upon the most presenting portion of the tumor, and obtained a free discharge of fetid pus. The sac was treated by carbolized tents, and the patient made a rapid recovery."

Labial abscesses become chronic in another way; the duct of Huguier's gland becomes obliterated; an abscess and discharge of pus take place by spontaneous eruption; the opening closes, and this is followed by reaccumulation, rupture, etc., and this is repeated for an indefinite length of time. This form of chronic abscess is best treated by laying the sac open freely and emptying at once, or keeping it open until the contents are evacuated, and then every second or third day injecting a solution of nitrate of silver or tincture of iodine, or some other irritant that will awaken granular inflammation in the lining membrane of the sac. This kind of treatment should be persevered in until the cavity is obliterated completely.

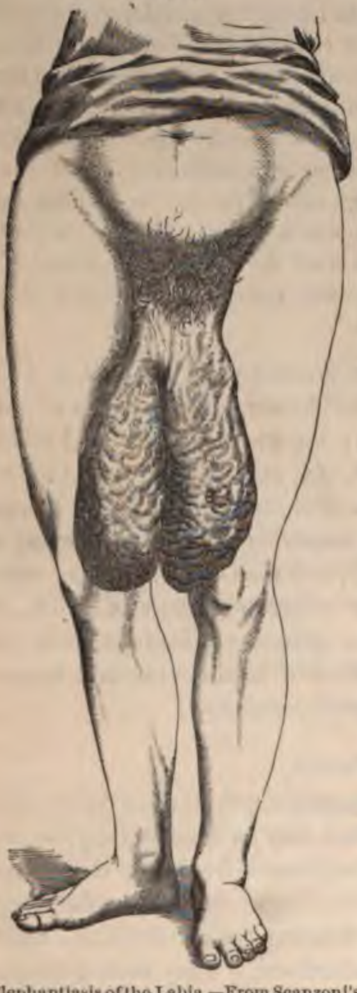
Labial Tumors

Do not differ in any important respects from those observed in other parts of the body. In structure they may be fibrous, fatty, or encysted. The latter kind I have met with more frequently than either of the others. The fibrous are next in frequency, and the fatty perhaps least. In no respect does the treatment differ from the treatment of the same kind of tumors elsewhere. They should be dissected out thoroughly, no portion of tumor or cyst being left behind from which to be reproduced. The vulvo-vaginal gland is occasionally developed into a cystic tumor by the closure of the duct through which its contents are evacuated. This and the other forms of encysted tumors of the labia may be treated by evacuation and stimulating injections until the sac is obliterated.

Hypertrophied Labia.

The labia are sometimes *hypertrophied,* without much alteration of structure, to such a degree as to become cumbersome and troublesome, requiring amputation. This may be done by the knife or écraseur according to the shape and size of the superfluous part.

FIG. 1.



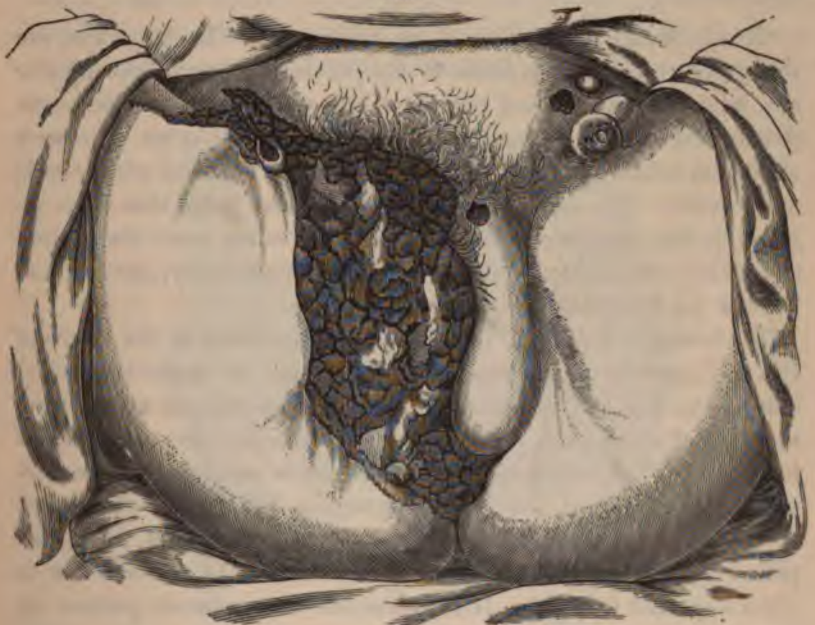
Elephantiasis of the Labia.—From Scanzoni's *Diseases of Women.*

These organs are very rarely the seat of *elephantiasis,* Fig. 1 (Scanzoni). They sometimes are enlarged by this disease to an enormous size, extending down to the knees, as shown in the figure taken from Scanzoni. If we meet with this affection before it has involved too much of the substance of the parts to be completely excised, we are justified in removing it; but if the skin on the thighs or abdomen is affected, so as to require extensive and dangerous dissection, we should not operate for this purpose, but content ourselves by palliative treatment, cleanliness, anodyne lotions, etc. It should be remembered while considering the propriety of removing small tumors of this kind that they very often return and resist every species of treatment.

Cancer of the Labia

Is not of unfrequent occurrence. I have only seen the epithelial variety in this locality. Two cases have come under my observation within three years. The last one was a Scotch woman fifty-one years of age. The disease was located on the left side. When I first saw it the whole left labium presented an appearance so similar to a case illustrated by Fig. 2, in Dr. McClintock's work on women, that I have availed myself of that figure. In my case the disease was on the opposite side. When the disease has not advanced so far, but that it may all be removed, we are justified in excising it. We should be very particular to remove all the morbid substance. Scirrhus probably very rarely invades the labia majora. Dr. McClintock gives one case only. It does not seem, from the consultation of other authors, they have often met with it. The soft or fungoid variety seems to occur with even less frequency than the hard form of cancer. Cancer of the labia is attended with similar symptoms, and presents the same appearances that it does in any other organ. I need not stop to give it more attention in this place.

FIG. 2.



Absence of the labia is very rarely observed.

CHAPTER II.

PERINÆUM.

"MIDWAY between the posterior vulvar commissure and the anus. Those perineal structures which meet there become, as it were, fused together by a great accession of elastic tissue without altogether losing their identity; the result is a body or structure at once highly elastic and resistant."

This is Savage's definition of the perinæum. The structures are the superficial and deep fascia of the pelvis, portions of the levator ani, internal and external sphincter ani, transversalis perinei, constrictor vagina, and connective tissue. As are all other structures associated with the genital organs, it is richly supplied with vessels and nerves. The vessels are so numerous and large that when injected during pregnancy this body becomes softer, more elastic, and distensible, and, in fact, undergoes a sort of hypertrophy, less marked, but not less real, than the uterus and ovaries.

The bilateral halves of the perineal tissues unite in the centre of this body, and their junction corresponds with the raphe as marked out on the skin. This central line is the weakest part of the perinæum, and is the track pursued by lacerations in a great majority of instances. The perinæum is suspended in its position by the different muscular, fascial, and tendinous organs and tissues which converge to it. It is, therefore, displaceable, and is, in fact, easily displaced by force applied to it in any direction. In defecation it is often displaced forward. It is moved out of its normal position by the downward displacement of the contents of the pelvis and the contents of the uterus as they are expelled during labor. The elasticity of its attachments quickly restore it after the forces have been withdrawn. The displacements are usually greatest in the direction from the weakest points of attachment. In labor and displacements of the pelvic organs it is pushed downward and backward toward the anus.

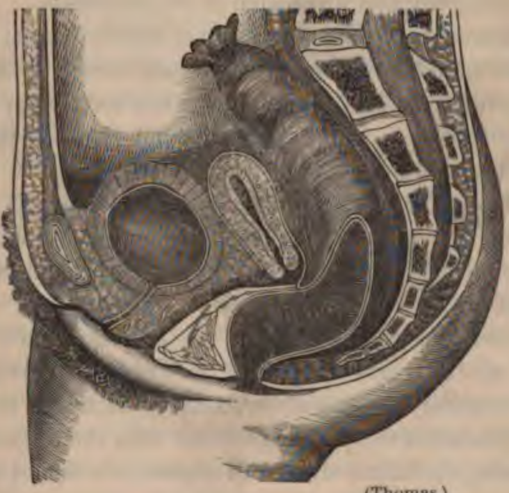
When split in the centre each half has the appearance of an irregular triangle. The side next the vagina is nearly twice the length of either of the other two sides and decidedly convex. The posterior portion of the triangle, or the side in contact with the rectal tissues, is shorter than the anterior, while the lower one next the integument is still shorter and slightly concave.

Situated at the bottom of the pelvis, between the rectum and vagina, it forms the floor of that cavity. Its upper angle is not directed upward but obliquely backward, with reference to the centre of gravity, and if extended would strike the lower part of the sacrum. Its anterior angle in many instances, when normal, extends forward nearly to the symphysis, while its posterior angle, when the rectum is empty, points toward the coccyx.

It will be seen by looking at the figure that the vaginal convex side is the part upon which the viscera above have their bearing.

While considering the perinæum the floor of the pelvis, we must not forget that it antagonizes the diaphragm and abdominal muscles and is a part of the wall of the great infrathoracic cavity. For while that cavity is divided into the abdominal and pelvic they are continuous, and some of the organs of the abdomen in the usual condition of things extend into the pelvic cavity, and in pregnancy the pelvic organs rise into and fill up the abdomen.

FIG. 3.



(Thomas.)

The impairment of the tone, or a loss of a portion or the whole of its structure, has a similar effect to the loss of tone or a portion of the structure of the abdominal wall. It permits the contents of the abdomino-pelvic cavity to pass out just as hernia is produced by a deficiency in the abdominal parietes.

The shape, size, and firmness of different perinæi differ very greatly. This body indicates with some degree of correctness, the muscular vigor of the patient. In strong, muscular women it is apt to be thick, strong, and unyielding, and is probably more frequently lacerated than in weaker persons.

In women of low muscular development it is often almost useless as a means of support. Its firmness and efficiency are also dependent upon the age and general condition of the patient. It keeps pace with the development of the genital organs. In early childhood it is rudimentary in structure and size; stronger in youth; completely developed in the middle period of life, and becomes atrophied in old age. In pregnancy it becomes thicker and stronger, through a species of hypertrophy, to successfully resist the continued pressure of the diaphragm and abdominal muscles. A very short time before labor it becomes more than ordinarily vascular and distensible.

After labor its vascularity subsides, it undergoes a process of involution, which results in the removal of its redundant tissue, it becomes dense and resisting. At this time the lax condition of the abdominal walls and consequent diminution of pressure from that direction favors complete involution of the perinæum.

The consideration of the antagonism of the abdominal muscles and the perinæum would lead us to question the propriety of using a tight-fitting binder after labor. The binder when snugly applied restores the abdominal tension, while the perinæum is weak and unable to resist the downward pressure.

I think the binder when applied in the usual way is of doubtful value, because it interferes with that freedom of circulation intended by nature, pressing the uterus lower in the pelvis and retarding the involution of all the organs concerned.

The position and relationship of the perinæum are such that it partakes of all the morbid influences to which the pelvic organs are subjected; especially lesions of circulation, excessive coition, labor, and gonorrhœa affect the perinæum more than the organs higher up.

In estimating the effects of loss of function, we should steadily bear in mind that diseases and accidents affecting the perinæum simultaneously affect the organs associated with it and dependent upon it for support. While, therefore, we say that ruptured perinæum prevents complete involution of the uterus, we ought to remember that the two were simultaneously and equally subjected to the morbid effects produced by protracted or disastrous labor. The interdependence of the pelvic organs is such that I have no doubt but that subinvolution of the uterus and vagina sometimes keeps up a state of hyperæmia that prevents a ready repair of the damages done the perinæum. We know that rupture of the perinæum does not always arrest its involution, and it is only when associated with disease of the pelvic organs that inconvenience arises from a small rupture, and in fact, extensive ruptures are not always a source of suffering.

These considerations have a very important bearing upon the treatment of a deficient perinæum, and often the best course to pursue to secure success in our treatment is to cure the associated disease first.

A large uterus in a state of prolapse, or a hypertrophied and extended vagina, if not properly treated before the operation will frequently undo an otherwise successful perinæorrhaphy.

In reading the reports of uterine surgeons this fact will not unfrequently show itself. In calling attention to the above considerations I do not desire to detract from the importance of a surgical operation when the perinæum has been impaired by laceration, but I wish to apprise the student of the fact that when an operation is clearly necessary, like all other important surgical operations, it requires preparatory treatment to insure success.

Rupture of the Perinæum.

The perinæum and labia majora are liable to be torn during severe labor. A number of causes may, under certain circumstances, lead to these accidents. A straight sacrum, by allowing the head to emerge from the pelvis farther back than usual, although not a frequent, is an occasional cause. Rigidity of the perinæum, or undilatable state of the external organs, a condition frequently found in aged primipara and occasionally in other patients, is also a cause. A large and unusually ossified head, malposition of the head when the occiput emerges too much posteriorly, and a too narrow arch to the pubis, may also act as causes of rupture.

The perinæum may be, and doubtless is, not unfrequently ruptured by the unskilful use of the forceps: First, by not making the proper spiral change in the position of the head so as to bring the occiput under the arch of the symphysis; or, secondly, by not causing this part to keep close to the symphysis, by raising the handles at the proper time, and to a sufficient extent; or, thirdly, by elevating the handles of the forceps too much, the points of the blade may be brought in forcible contact with the perinæum, and thus, added to the great distension, cause rupture; fourthly, the forceps may be allowed to slip off the head under powerful traction. Mere slipping of the forceps, when the points of the blades pass behind the head, and become detached entirely, and the convexity of them is not increased, will not generally produce this effect. When this is the manner of missing the hold of the instrument, the blades will be pressed close together, and pass through the parts without great distension. But if, instead of this mode, the blades spring so that the points are made to pass out over the largest part of the head, and thus widely separate the blades, the convexity becomes so great as to distend the parts enormously, and thus split through the fourchette first, and then the perinæum, and finally, in some instances, the sphincters.

The injudicious use of ergot, by expelling the head so rapidly that the parts have not time to dilate, in some cases is undoubtedly the cause of ruptured perinæum.

The head is not always the part of the fœtus by which the rupture is produced, for sometimes the passage of the shoulders, if they are large and delivered rapidly, lacerates this part very badly; and I knew one instance in which the rupture was caused by bringing down the knee, and another case of breech presentation where the elbow caused a complete laceration of the perinæum.

The breach of substance, of course, differs very considerably. It generally begins at the fourchette and extends backward to a greater or less extent. Mr. Brown divides the accident into slight and grave. He regards those as slight which are not ruptured through the sphincter, and believes that when the sphincter is violated, and then only, need much importance be attached to the accident. The external sphincter is sometimes injured considerably, and the rupture stops short of its complete division, and at others both are torn through, and half an inch or more of the recto-vaginal septum also divided. I saw one instance in which the two sphincters were torn through, while the larger part of the substance of the perinæum in front of them was uninjured, the child having passed through the septum into the lower rectum, and through the anus, producing the above rupture. This case did well without any operation. The wound generally commences at the fourchette, and extends backward towards the anus, but occasionally it takes a direction to one side and passes outside the sphincter, leaving the anal opening untouched. At other times the rupture, commencing at the fourchette, is directed laterally outward, so as to separate to a greater or less extent one or both of the labia from the perinæum.

Effects of Laceration.

We must not underrate the importance of the slighter forms of this accident, for, reason as we may as to the means adapted to the support and maintenance of the uterus in its proper position, as the *floor* of the pelvis the perinæum serves an important part in sustaining that organ. When the perineal support is lost, the positions of all the pelvic viscera are likely to be disturbed in their relations one to the other. It is very rare to see, indeed I have never seen, the uterus, bladder, or rectum, protrude from the vaginal orifice when the perinæum retained its perfect integrity. On the contrary, one or all of them, when other causes co-operate, may be comparatively easily displaced after the main portion of the perineal substance is lost. It will only be necessary to remember that the perinæum being in the virgin triangular, the base at the skin, and the apex looking up and backward into the cavity of the pelvis, and that the upper part, or apex, extends at least an inch, and reaches obliquely above the tuberosities of the ischium, and that farther behind is quite a depression, into which the uterus, bladder, and rectum, in a state of distension, are lodged, gravitating there in a direction with the superior strait, to understand the great inconvenience of its loss. When the perinæum anterior to the sphincter is split, this muscle will draw the anus farther back, and thus destroy the *pelvic pouch*, leaving its contents to settle still lower down. I think that it is in this wise the most distressing protrusion of the vagina, bladder, rectum, and uterus, one or all of them, is permitted, if not caused. It is true that in all cases of loss of the perinæum, protrusion of these organs will not necessarily occur, but when extensive displacement of this kind is observed, it is almost always in connection with deficient perineal support. More serious and invariable are the consequences of the most extensive ruptures—the loss of the functions of the perinæum and sphincter both. Prolapse of the viscera and involuntary discharge of the contents of the rectum result. If the fæces are hard, the patient can generally manage to seek a proper place to perform defecation; but if fluid, there is no warning until they flow upon the person. The mucous membrane of the vagina is generally irritated and inflamed, while the skin is chapped and excoriated from frequent contact with the fæces.

Treatment.

Prevention, always the best treatment when available, will vary with the cause of the rupture. When, in labor, the perinæum is very rigid, and relaxes with difficulty, the patient should be placed under the influence of chloroform, which induces relaxation with more certainty, perhaps, than any other remedy. Minute nauseating doses of tartarized antimony, every half hour, is next in efficiency to chloroform. I would not consent to bleeding in such cases, unless there was evident approach to inflammation in the part, and in no case is tobacco to be thought of. In this condition of the perinæum, the irritability of the structures ought not to be increased by attempts to support it. The perinæum may be supported when greatly distended, and when its integrity is threatened by too great inclination of the presenting part backward. The object of the support, in cases where it is deemed advisable, should be to keep the head as close to the pubic arch as possible, but not to retard its expulsion. Not much force is allowable for this purpose, or any other in relation to the perinæum. It is needless, after what has been said as to the manner in which this accident occurs from the use of the forceps and ergot, to indulge in special admonitions as to their use.

Spontaneous Cure.

Occasionally nature is capable of curing some of the worst forms of lacerated perinæum. The first bad case of ruptured perinæum I ever saw was completely cured by nature with very little aid from art. It was in the person of a large and very fleshy primipara forty years of age. The rupture extended from the fourchette to the internal sphincter inclusive. Our ideas as to the proper mode of treating recent cases of this kind at that time were not so decidedly in favor of immediate operation as at present. The only treatment this patient had was confinement upon the side and coaptation of the parts by flexing the knees somewhat and binding them securely together. An examination three months after confinement showed a complete restoration of the perinæum. This case occurred in the hands of a midwife.

A more remarkable case occurred in my own practice. The patient was a large muscular woman who enjoyed robust health. In her first confinement she suffered a rupture of the entire perinæum and sphincter and three-quarters of an inch of the recto-vaginal septum. With the perinæum in this condition she bore two children.

The operation to restore the perinæum, according to Baker Brown's method, was performed six years after the occurrence of the accident. The rent in the septum and perinæum was perfectly closed, and the vaginal opening was restored to its primitive dimensions. One year after the operation pregnancy ensued for the fourth time. When labor begun I was sent for, and arrived in time to find the occiput, which was posterior, ploughing through the perinæum, and by the time the condition of things was recognized my work was completely demolished. The perinæum was gone.

I proposed an immediate operation, but no persuasion or entreaty would induce my patient to submit to it. She was confined to the side, the limbs secured, and opium administered to prevent the passage of fæces through the rectum. Her recovery was perfect, and she has had two children since without a rupture. These two patients were alike in being large and fat, with fleshy limbs, so that when lying on the side the parts were pressed firmly together. They both had very short labors, and the perinæi were torn without being bruised by long contact with the head.

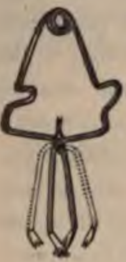
A patient is now under my care for subinvolution, who was sent by a physician of the interior of this State. Rupture of the perinæum had occurred as the result of forceps delivery, and, according to the statement of the gentleman who referred the patient to me, was entirely through the sphincter It is now five months since the accident, and there is only the cicatricial trace of it left. The fastidiousness of the patient forbid an examination, but the doctor was so sure of the existence of the laceration that he sent her to me for an operation. From my knowledge of his intelligence, and the amount of obstetrical experience he has had, I believe his statement in reference to the case. The spontaneous closure of slight lacerations is in fact so common that many practitioners of great experience regard them as of but little importance.

The Immediate Operation.

The cases in which patients escape from subsequent evils directly referable to ruptured perinæum are very properly regarded by advanced gynæcologists as exceptional. An array of names, that must have weight with the profession, is made up of those of Mundé, Pallen, Nœggerath, Skein, Garrigues, Emmet, and Thomas, of New York; Jenks, of Chicago; Lyman, Richardson, and Renolds, of Boston; Albert H. Smith and William Goodell, of Philadelphia; and Howard and Wilson, of Baltimore. To these names might be added many others of great respectability who favor immediate operation for restoring a ruptured perinæum.

An accoucheur can hardly be considered as performing his whole duty to his parturient patient unless he ascertains what effect has been produced by labor upon the perinæum, and if there is rupture of even a moderate character take some efficient measures to restore its integrity at once. Most writers upon the subject recommend sutures of silk, catgut, or silver, applied as soon after delivery as possible. Any one of these substances will answer the purpose, but I think silver wire is the best. It will not generally be necessary to give an anæsthetic, as the sensibility of the parts is exhausted by the great pressure and distension to which they have been subjected. The application of the stitches should be made carefully and deep enough to include the whole of the cleft substance. Dr. Garrigues, in an excellent article in the April number, 1880, of the *American Journal of Obstetrics*, recommends the *serre-fine* as being sufficient in most cases of recent rupture. Dr. Garrigues tells us that they were invented and introduced by Vidal de Cassis, of Paris, in 1849 (Fig. 4). After an operation, or the use of the *serre-fine*, the perinæum will not always unite by first intention; it so frequently does, however, as to encourage the effort.

FIG. 4.



The operation inflicts so little pain that occasional failures should not deter us from the trial. Cases in which there has been protracted pressure and consequent bruising of the perinæum will be more likely to fail than those in which the fœtus has been expelled with great precipitation. When the operation to heal a moderate laceration has failed, or the case does not come under observation until cicatrization has begun, the immediate operation is not advisable.

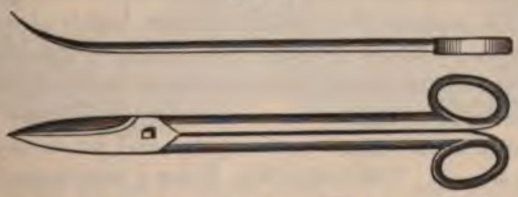
If we do not perform the immediate operation for the first four or five days after confinement, the patient must be confined to her side, and it would be better, also, to surround the limbs at the knees with a roller, or bandage, to keep them constantly in contact. By lying on the side with the limbs close together, the parts are kept in almost perfect contact, and the lochial discharges flow out anterior to the wound. These two circumstances are essential to a cure. A diligent observance of the position on the side for a number of days, and a close proximity of the knees, is apt to result in adhesion of a part of the wound by the first intention, and much more of it by granulation. After the lapse of eight or ten days, the parts ought to be inspected, and a healthy state of granulations encouraged by cleanliness, good diet, and, if need be, by a stimulating application of tinct. cantharides every four or five days. After the opportunity for treating such cases in their recent condition is past, and prolapse of the bladder, rectum, uterus, or vagina, renders interference necessary, the operative procedure is so similar to that necessary for the worst cases, that I will consider them in this respect together, and point out the difference as I proceed.

A patient, to undergo this operation and be cured by it, must be in good general health. If she is not so, the operation ought to be delayed until proper means can be used to effect it. A firm, plastic state of the solids, without unusual tendency to suppuration, will be the most favorable condition. Patients coming from the country will do better to have the operation performed at once, and it is better, if practicable, to send our town patients into the country for a month or more. Thirty-six hours before the operation is to be performed we must administer an efficient but not drastic laxative; castor oil or rhubarb will do very well. The patient should be placed in the lithotomy position before a strong light. If an anæsthetic is administered,—and it will very much facilitate the management of the patient,—it may be given at this stage of the proceeding. One assistant is placed at each side of the patient to steady the knees and hold the legs, while another assists in the use of instruments. The instruments necessary are a scalpel, a blunt-pointed bistoury, a pair of scissors, three large curved needles, or one large curved needle mounted upon a handle, tenaculum, dressing forceps, needle-holder, and wire-twister, and plenty of silver wire. Sponges, warm and cold water, of course, must be at hand. The surgeon seats himself in front of the patient within easy reach. He commences by removing the hair from all the parts on which he is to operate. After which the edges of the cleft part are to be thoroughly denuded with knife or scissors. The cicatricial tissue should be all removed smoothly and evenly on both sides and up to and along the front surface of the septum. No part of the mucous membrane or superficial tissue of any kind should be left, as it will inevitably prevent union.

Professor Edward W. Jenks, of the Chicago Medical College,* describes his very ingenious method of denuding the parts in cases where the sphincter is not entirely torn through. He says:

> "I begin by nicking with scissors the anterior margin of the surface to be denuded, at the juncture of integument and mucous membrane; next, I introduce two fingers of the left hand into the rectum, while assistants hold the labia apart, it being important that they are held uniformly tense. I use scissors slightly curved and sharp-pointed (Fig. 5) to denude the mucous membrane. I use neither tenacula nor tissue-forceps, but, with the parts tense, snip a hole in the mucous membrane in the median line, close to the integument, and then inserting the scissors

FIG. 5.



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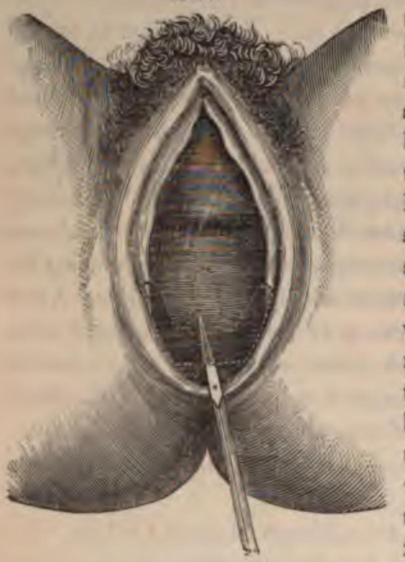
* Op. cit.

with a cutting motion into the small hole made, I continue to dissect the mucous membrane away from the subjacent tissues without removing the scissors, first going up the septum as far as is desired, and then laterally, first on one side, and then on the other, without removing the scissors or once bringing their points out from beneath the mucous membrane, as shown in Fig. 6.

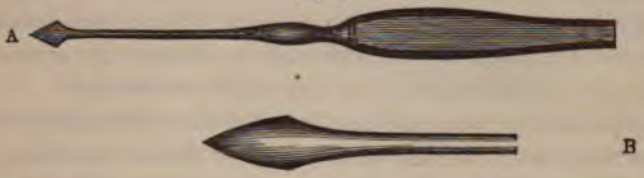
FIG. 6.



"Sometimes, instead of beginning my dissection at the median line, I begin at the nick on the left labium majus, running the points of the scissors beneath the mucous membrane, and dissecting it away from the subjacent tissues back on the left lip, then up the recto-vaginal septum as far as I deem it necessary, and from thence forward on the right lip to a point opposite from which I started (marked by the nick), without allowing the scissors to come out from beneath the membrane, unless they are accidentally turned out by cicatricial tissue. Then with blunt-pointed scissors cut away the dissected flaps. The bared surface thus exposed is much the shape of a right-angled triangle, with the base directed outward, or it has been compared in shape to a butterfly, with wings spread and tail directed upward.

"The advantages of this mode of denuding are: (*a*) the rapidity with which it can be done; (*b*) the absence of hæmorrhage in the vagina, as no blood escapes except at the locality where the scissors enter beneath the mucous membrane; (*c*) the ability by which the operator can make complete denudation, as the discoloration between the membrane marks the route the scissors have taken. Several of my brother gynæcologists have tried this method of denuding, and are highly pleased with it. Among them is my friend Dr. Albert H. Smith, of Philadelphia, who, thinking he could better denude with a knife than scissors, had one made, which he found after several trials to be a very satisfactory instrument, by which he can denude much more rapidly, and yet on the same principle as with scissors. The knife (Fig. 7) has a dart-shaped thin blade with double-cutting edges. The patient, when the knife is used, is put in the same position, and with the same degree of tension of the parts as for the scissors; the knife is inserted beneath the mucous membrane in the median line, at its juncture with the integument, and from thence the submucous incision is made on one side, then upon the other, then up the septum the required distance, after which the flaps are cut away with blunt-pointed scissors. I have, up to the present time, used the knife devised by Dr. Smith only three times, and although, as a rule, having preference for the scissors over the knife in all plastic operations, I have been delighted with the rapidity and ease by which I have been able to operate with the knife which he kindly sent to me."

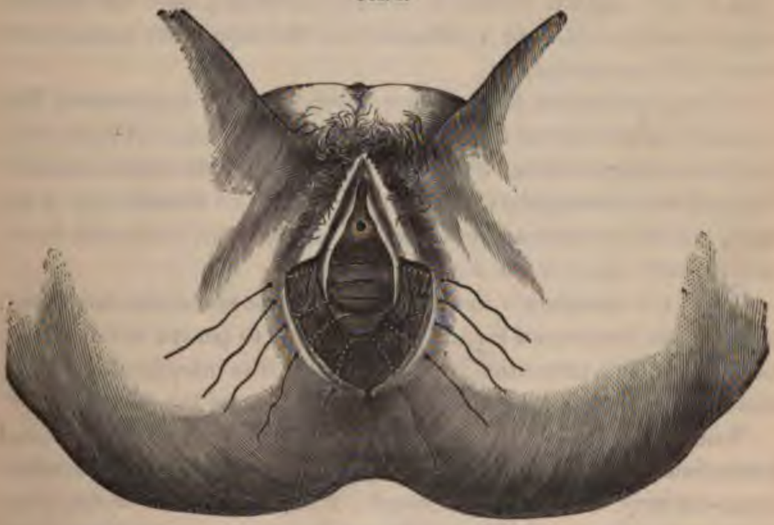
FIG. 7.



In complete laceration, where the septum is involved to any extent, the edges of the rent should be denuded and closed by silver sutures first, and the perineal sutures placed afterwards.

The object of the perineal sutures should be to bring the ends of the torn sphincter together. If we use the long curved needle, it should be threaded with silk, and the point entered on the left side as far back as the posterior border of the anus, and passed forward and inward as high as the septum, including the lower edge of it, and then brought out on the right side, including the sphincter, in the

FIG. 8.



same manner as on the left. The silver wire is then attached to the thread and brought through. The next suture is to be introduced exactly as the first, but about one-quarter of an inch further forward. These two sutures are intended to bring the ends of the sphincter muscles together. They generally do this quite effectually. Dr. Emmet was the first to insist upon this method of bringing the ends of this muscle in coaptation. Three or four more sutures are introduced, the third one deep enough to include the septum, and the others of a depth sufficient to give solidity of surface.

After placing the wires and being assured that their position is such as to secure perfect coaptation they may be twisted, beginning with those behind, until the wound is accurately closed. If it has been necessary to close the septum, the wires should be left long enough to project beyond the vulva, to facilitate their removal. If the rupture does not involve the sphincter, the posterior suture is introduced anterior to the sphincter, but in such a manner as to draw forward the posterior angle of the wound and deep enough to include the septum. The other sutures may be placed as in the case of complete rupture.

If there is rectocele in connection with the laceration, the anterior wall of the septum should be largely denuded, and the perineal sutures made to include a sufficiency of the redundant vagina to do away with the protrusion.

As the silver wires do not cause ulceration and suppuration, like the hemp or silk sutures did when they were in use, it will generally not be necessary to remove them so soon. Unless the tissues included are somewhat strangulated, the sutures ought to remain nine or ten days, but if any tendency to ulceration shows itself, they must be removed early—five or six days.

When the operation is complete, a rectal tube should be introduced and kept in the rectum for the first six days to permit the discharge of gas. If this precaution is not observed, the intestines may be so distended as to prevent union at the lower edge of the septum.

When the operation for restoration of the perinæum is performed immediately after the injury, it is done, in everything but denudation, similarly to that just described. I think the silver wires, when they can be obtained, are better than any other material for sutures. Where much delay would be necessary, however, to procure the proper material, the surgeon may use a straight cambric needle armed with silk. This last material, if carbolized or well waxed, will answer very well for sutures. The only instrument absolutely necessary in these recent cases, is the needle with the silk. Sometimes they are all we can get without important loss of time.

It is advisable, I think, before, or immediately after the operation, to give the patient about two grains of opium, or its equivalent in some of its preparations, and continue it at intervals, to keep the bowels from moving and allay irritability and pain. The patient is to be placed on her side, and have the limbs secured by a bandage at the knees. The position may be carefully changed from one side to the other, being always particular to keep the legs close together, and not to allow them to be used so as to contract the muscles at the pelvis. Every six hours, or oftener, the catheter is to be used to draw off the urine, lest it run into the wound and vitiate the inflammation. Dr. R. Stanbury Sutton, in an unpublished letter to me, says "the catheter is not necessary in perineal operations. I let the woman pass her water over a bed-pan, and then let the nurse wash out the vagina with a quart of hot water slightly carbolized. The wound should be kept covered with pledgets of lint saturated with simple cerate or cold water." If suppuration occurs we cannot be too careful about cleanliness. Plenty of clean tepid or cold water must be injected into the vagina and rectum two or three times a day, while the external parts are sponged and cleansed as often. The young operator need not be discouraged if, upon examination, the wound is not all closed by adhesive inflammation. My experience is that this immediate and perfect closure does not usually take place, but that much of the deepseated portion is left to be filled by granulations, and it is sometimes several weeks before this is accomplished. The skin and integuments generally unite by the first intention, and when this is the case, there is not much danger of failure, provided we keep up a granulating surface all over the unhealed portion of the wound, and observe perfect cleanliness. At the end of twelve days some laxative will be necessary if the bowels have not been moved. The diet and medicine of the patient while in bed, after the operation, cannot be the same in all cases, and are to be governed wholly by the state of the system; it will be better, I think, to err in favor of good supporting diet, stimulants, and tonics, rather than risk impairing the general health by abstemiousness. Adhesive inflammation is promoted by a high state of physical health, and suppuration by a low condition of it, and aside from imperfection of the operator's proceedings, we have most to fear from early, copious, and persistent suppuration.

CHAPTER III.

DISEASES OF THE VULVA.

Condylomata of the Vulva.

WARTY excrescences in great variety make the vulva the seat of their growth. They are often flat, smooth elevations, small usually, but sometimes as large as filberts, isolated or congregated. Sometimes they are sparsely scattered over the cutaneous surface of the labia, the mucous covering of the vulva, but not unfrequently they are thickly crowded together, with deep fissures between them and excoriations on their surfaces, that give origin to acrid sanious discharges, which excoriate the neighboring skin and soil the linen. The smell from this sanious discharge is sometimes very offensive. These excrescences are not always smooth and rounded even when isolated, but occasionally are rough and ragged, and in a few instances those springing from the margin of the vagina are arborescent, slender, and from half an inch to an inch in length. We again find them yellow, flat, and fragile. In most instances these growths are confined to the vulva and labia, but sometimes they cover a large part, if not the whole of the mucous membrane of the vagina and cervix uteri. I saw a case quite recently in which arborescent excrescences—many of which were three-fourths of an inch in length—sprang from the whole of the vaginal mucous membrane. This patient was pregnant by a syphilitic husband.

The *cause* of these growths appears to be the syphilitic taint. So far as I now remember all observers agree that syphilis is the only cause of them.

Treatment.

We may very properly trust the alterative course calculated to remove the syphilism under which our patient is laboring for the relief of the milder forms of these excrescences, and we should not fail to institute alterative treatment for even the more harassing varieties; but in many cases we shall relieve the patient more readily by removing a part or the whole of the larger growths with scissors, and afterwards dressing the wounded surfaces with mercurial ointment.

Erythematous, papular, vesicular, and *pustular inflammations of the vulva* are not unfrequently observed, as are also squamous diseases. They resemble the same form of disease in other muco-cutaneous cavities and the skin, and hence will not here claim a separate description. A disease somewhat more distinctive, however, and yet resembling a disease of the mouth, is known as *purulent vulvitis.* This affection is characterized by severe inflammation of the mucous membrane of the vulva, attended with minute points of ulceration, numbering from one to two dozen. The ulcers are small, an eighth of an inch in diameter, slightly excavated, and almost always covered with pus. The vulva is intensely red, and bathed in pus and mucus. The inflammation sometimes extends into the vagina and causes a copious flow of pus and mucus from that cavity. Not unfrequently the labia are very much swollen, and occasionally the deeper tissues are involved in phlegmonous inflammation. This form of inflammation is not unfrequently, in its early stages, attended with considerable febrile excitement. To a superficial observer it strongly resembles gonorrhœa, from the swollen labia, burning pain, copious muco-purulent discharge, and the difficult and painful micturition. Its occasional sudden and unexpected development adds to this similitude, and legal proceedings have been instituted against parties supposed to have been instrumental in imparting the disease to little girls. It occurs in children generally from two to ten or twelve years of age, and probably results from want of cleanliness, heat, and local irritants accidentally applied. If allowed to pursue its course undisturbed by treatment, other than cleanliness, it will generally subside spontaneously in two or three weeks, or in the course of that time become very much subdued, and run into chronic inflammation without ulceration. This last is often extended into adolescence, and, as vaginitis, gives origin to the leucorrhœa of girlhood, and finally to the endometritis of the woman. It sometimes attends upon a debilitated and scrofulous constitution, and is complicated with indigestion, constipation, and ascarides; but it is not likely originated, though it is aggravated and fostered, by these attendant circumstances.

Treatment.

The treatment is general and local. In the beginning, where the inflammation is high, it should be antiphlogistic and soothing. We may administer a mercurial cathartic, and quicken its action by a saline laxative, and after the bowels have been thoroughly moved, nitrate of potassa may be given internally, every three or four hours, in doses to suit the age of the patient. The parts should be frequently bathed or fomented with a decoction of poppy-heads, or with the watery extract of opium. In the course of four or five days the acute symptoms will begin to subside, when, in addition to attention to the bowels, we may administer an acid solution of quinine internally, and begin the use of astringents locally. A solution of tannin, sulphate of zinc, acetate of lead, or other such astringent, weak at first, and afterwards increased in strength, may be applied freely to the parts four or five times a day. These remedies will generally remove the inflammation in a reasonable time. The astringent should be increased in strength to a sufficient degree for the purpose. If those mentioned are not strong enough, the chloride of zinc, sulphate of copper, or even nitrate of silver, may be very properly resorted to. Should the inflammation extend into the vagina, the astringent may be injected into that cavity by means of a small hard-rubber syringe. We ought to be careful to use a very small syringe, and not to introduce it too far. The nurse should be carefully instructed in this kind of application. I feel impelled to insist upon the complete removal of the inflammation as early as it can reasonably be done, believing that if it continues until puberty, the inflammation extends into the body of the developing uterus, and entails a very distressing train of suffering upon the patient, that might have been avoided by an early and complete cure of the vaginitis. I am persuaded that too much importance cannot be attached to these views.

Follicular Vulvitis.

Inflammation of the vulva, instead of affecting the mucous membrane, as in the purulent form, is sometimes confined to the follicles and glands of the vulva. In this form of the disease minute papillary elevations on the mucous surface of the labia majora, the nymphæ, the prepuce of the clitoris, and elsewhere in the orifice of the vagina are first observed. These increase in size and become red, while the intervening mucous membrane is often very much inflamed. In many instances a number of these elevations become pustules, their bases hardened, red, and very tender. Oftener there is only a copious flow of mucus stained with pus-corpuscles from the follicles. The acute form will generally run its course and subside in a few weeks, sometimes in from ten to twenty days. But follicular vulvitis occasionally becomes chronic, and then is exceedingly obstinate and difficult of cure.

Causes.

Want of cleanliness, vaginitis, pregnancy, and malignant affections of the vagina and uterus are the most frequent causes.

Treatment.

Rest in the recumbent posture, alterative and saline cathartics, cleanliness, first emollient poultices, and afterwards astringent washes and applications. If the patient is debilitated, the bitter tonics, quinine especially, will be found useful. The subjects of this form of vulvitis generally require supporting and tonic treatment. When the secretions are offensive, carbolized glycerin should be freely applied, two or three times a day.

When it is chronic, there will be necessity for the use of stimulants so strong as to modify the inflammation. Nitrate of silver in substance applied once in seven or eight days to the whole of the inflamed surface will sometimes cause the disease to yield. In connection with this glycerin, with tannic acid dissolved in it, or impregnated with creasote, may be used between times.

Alteratives are often found to be very beneficial. Iodide of potassium, sarsaparilla, stillingia, and, in plethoric patients, mercury are the ones on which most reliance may be placed.

Dr. Thomas speaks of having made a cure by "dissecting off the whole mucous membrane lining the vulva."

Pruritus Pudendi.

A very annoying and often obstinate affection of the genital organs is an inordinate itching of the vulva. The itching returns in paroxysms. The patient will sometimes be free from it except when standing by a warm fire, or becoming heated by exercise, passion, etc. Or she may be affected only at or near the menstrual period. Again, the paroxysms return without any apparent reason. The sensation sometimes is that of a burning glow, attended with an irresistible desire to rub or scratch the parts, a desire which the most delicate sense of propriety cannot always keep within due bounds. At other times the sensation is such as might be produced by the crawling of pediculi, and the patient is assured that thousands of these insects are moving upon her person, and will be convinced to the contrary only by inspection. This sense of formication, although very disagreeable, is a slight inconvenience compared to the sufferings of the other variety.

The former variety is almost always attended with inflammation of the mucous membrane of the vulva. The accompanying inflammation may be simply erythematous, papular, or vesicular. Dr. Dewees describes a variety of vesicular inflammation resembling aphtha, attended with pruritus. I am sure that the papulæ or vesiculæ are neither of them always present in very distressing cases of this affection, although I have not seen it when the parts were not in some way inflamed. It may be observed that, in the formication variety of pruritus, the itching is generally mostly, if not wholly, confined to the cutaneous surface of the labia. It will be inferred that I consider pruritus but a symptom of several diseased conditions generally of the genital organs, but sometimes it undoubtedly may be caused by the state of the intestinal tube, particularly the rectum, or by some other remote condition. An intelligent scrutiny of the cases as they arise will most frequently result in the discovery of the originating condition. It is often an obstinate affection, lasting for weeks, months, and even years, in bad cases, but more frequently it is amenable to treatment, and a judicious course will be rewarded by success.

Treatment.

The first thing to be done is to remove the cause, when practicable. In order to do this, the abdominal organs will require attention. The sluggish secretions and bowels must be corrected by alteratives and laxatives. A mercurial, say five grains of blue pill, may be given at night, to be followed in the morning by a saline laxative, sufficient to cause one or two stools. This may be repeated at intervals of from one to four days, until the object is gained. Meantime, if the stomach is weak and digestion imperfect, the bitter infusions, with alkalies or acids, as the condition may require, will be demanded; and should the patient be anæmic, iron may be given. Sometimes the patient will be plethoric, when the alteratives, with spare diet, will do better. With the above treatment, if the health be faulty, or without, if this is not the case, we will generally be obliged to resort to local remedies. And first of all is cleanliness. The parts, externally and internally, must be subjected to thorough and frequently repeated ablutions. The syringe may and should be brought into use for this purpose from three to a dozen times a day. The water used for ablutions may be impregnated with sal soda very appropriately, or some fine toilet soap. I have found much advantage, when there was no eruptive accompaniment, from two drachms of the tincture of the chloride of iron in a quart of water, three or four times a day. This is especially useful when there is leucorrhœa, and a congested, dark appearance of the mucous membrane. When there is a vesicular eruption, the recommendation of Dr. Dewees, to sprinkle the parts with powdered borax, and keep them exposed as much as possible to the air, will be of great service. Professor Simpson uses chloroform, in the forms of vapor, liniment, or ointment, with good effect. The infusion of tobacco, applied freely, two or three times a day, is recommended by the same author. When the mucous membrane is much inflamed, a solution of hydrocyanic acid, ten drops to the ounce of water, often gives great relief. A strong solution of tannin and aqueous extract of opium is also applicable to this class of cases. An excellent palliative is pure glycerin. It may be introduced into the vagina by saturating a plug of cotton with it, and passing it up through a glass speculum and allowing it to remain there for ten or twelve hours. We should take the precaution to attach a thread or cord to the cotton so that it may be readily removed. One of them introduced every twelve or twenty-four hours is often enough. We should also apply it between the labia in the same way. As explained by Dr. Sims, who first recommended its use, the glycerin induces copious serous depletion from the congested mucous membrane, thus relieving it.

In cases of some duration I have often been enabled to produce a decidedly favorable change by applying the tincture of the chloride of iron in full strength with a brush once a day to all the mucous membrane of the vulva, and as far in the ostium vaginæ as I could pass the hair-pencil. The first burning sensation is succeeded by great amelioration of the sufferings, and finally, in many cases, by a cure. When this fails, we may sometimes succeed by making a similar application of a solution of nitrate of silver in the strength of ʒss. to ℥j of water. This last application should not be used oftener than once in two days. In the use of all these remedies we must not lose sight of the ablutions, nor fail to search for particular local causes, and try to remove them. As has been very judiciously remarked by Professor Simpson, we will find great advantage in alternating the use of appropriate remedies, instead of using the same kind all the time. The obstinacy of this affection will require great patience in many instances, as well as ingenuity in using remedies.

Corroding Ulcer.

I have met with a number of cases of corroding ulcer of the vulva in children, which have been the cause of great suffering and apprehension. It occurs most frequently in children, but is occasionally met with in adults. There is in each case usually but one ulcer, and it is most commonly situated on the lesser labia at first, and spreads to surrounding parts. The ulcer is ragged and irregular, not much excavated, with a dark foul-smelling covering, and the discharge from it is sanious, fetid, and excoriating. It is not generally rapid in its progress, and sometimes lasts for months, creeping from one part to another until the anatomical features of the vulva are almost entirely effaced. I have not met with this form of disease except in very debilitated, sallow, and badly nourished persons. The state of the system leading to this sort of ulceration I have thought to be more particularly the result of living in poorly ventilated houses, but coupled, also, with imperfect nourishment, or with nourishment of an improper character.

It is generally obstinate, and yields but slowly to judicious treatment.

We should endeavor, as one of the main objects, to correct the constitutional condition as speedily as possible. To this end the circumstances of the patient should be changed to the most favorable sort. Good ventilation at home, frequent and prolonged exposure to the fresh air, nourishing diet, of which animal food should be a large ingredient, and comfortable clothing, with thorough cleanliness, are indispensable to success. The bowels should be kept in as correct a condition as possible by gentle laxatives. The digestion, which is always feeble, if not otherwise faulty, may be improved by the administration of infusion of cinchona, quassia, or colomba, with the mineral acids, the sulphuric being perhaps the best. The chlorinated tincture of iron is also an excellent general remedy. The next thing to be accomplished is to convert the ataxic, half-sloughing, and corroding chronic ulcer into an acute inflammatory one. This is done by profoundly stimulating it with the stronger caustics. The one which has seemed to me to be most successful is the caustic potassa. It should be applied to the whole surface by passing a stick, not very rapidly, all over it. After this burning we may dress the ulcer with calamine ointment twice a day. This will almost immediately improve the condition of the sore. Unless there is some considerable firmness around and beneath it, caused by the effusion of fibrin in the submucous substance, in thirty-six or forty-eight hours after the application not much good will result from it, and it will be necessary to resort to it or some other in a few days. The strong nitric acid is also very useful. I have not tried the actual cautery, but should expect it to be very useful. We may often cure this ulcer by the weekly use of the solid nitrate of silver to it, dressing between times with lint saturated with black wash or calamine ointment. We ought not to be afraid of strong treatment, nor to continue it, in conjunction with a highly roborant general course of exercise, diet, and medication.

Gangrenous Vulvitis, or Noma.

This is a very severe and generally fatal affection of the genital organs, occurring almost, if not wholly, among children. It may attack one or both sides simultaneously. In the few cases I have seen there appeared a bleb or blister on the inside of the mucous surface of the labium, which at the same time became enlarged, hard, tender, and painful. In a few hours the blister breaks, and from its side a not very abundant but acrid serum is discharged. At this time a peculiar odor is emitted from the parts. All around the ash-colored surface, which represents the place where the blister was developed, the substance of the labium is very hard and much swollen. In two or four days the affected side is in a state of gangrene, the discharge is very much increased, the parts upon which it runs are excoriated and inflamed, and an intolerable stench is exhaled. I have not seen an instance in which the gangrenous parts were cast off, the patients having died beforehand. Generally, though not always, in the very beginning, the circulation and nervous system are very much disturbed. The pulse is quick and feeble, the patient nervously restless, or else stupid, the extremities cool, the body—particularly about the pelvis—hot, the tongue furred, generally brown, and the skin dingy and sallow. As the disease advances the pulse becomes still more rapid and weak, the extremities cold, the mind wandering, and the restlessness amounts to the frantic efforts of some sort of delusion. The tongue becomes dark brown or black, the teeth are covered with sordes, and in the end the patient sinks into profound collapse, and often coma, and dies.

The disease runs its course sometimes in forty-eight hours, and again, in milder forms, it may last five or six days. The causes, although unknown, must undoubtedly be of a depressing nature, overwhelming the organism very rapidly. It occurs sporadically, when it is comparatively mild, and epidemically when severe. In this last state it is very rapidly fatal.

The prognosis is very bad, as it is always, or pretty nearly always, fatal. The profession, so far as I am aware, has not decided whether the disease is a general one, and the affection of the genital organs an incident, or whether the local disease inaugurates the general symptoms. The former is most likely the truthful interpretation of the phenomena.

In such a disease there is little prospect of a cure by treatment; we should, nevertheless, institute a course clearly indicated by the symptoms and signs. The general treatment should be strongly stimulant, tonic, and supporting; quinia, brandy, tincture of cantharides, and beef essence, as much as the patient can bear, should be administered. I do not think the strong caustic local treatment, generally advised, any better, if as good, as the charcoal and yeast poultices, chloride of lime, anodyne fomentations, and cleanliness. Much attention should be devoted to thorough ventilation, isolation of the patient, and the neutralization of the fetor by disinfectants.

Urethral Excrescences.

Caruncles of the urethra; vascular tumor at the orifice of the urethra: These names have been given to small tumors springing from the mucous membrane of the vulva, immediately round the urethral orifice, or from the lining of the urethra itself. They are generally solitary, but sometimes there are several. Sometimes they are sessile, and seem to be a hypertrophied fold of the mucous membrane of the orifice; at others they are polypoid in their attachment. In size they vary from a pin's head to a small nut. They also vary in their appearance. As before remarked, they sometimes resemble in color, consistence, and polish the mucous membrane upon which they are planted; while in other cases they are quite red, almost scarlet, very soft, and easily broken. They differ in their anatomical properties quite as much as in appearance, seeming, in some instances, to have no more vessels and nerves than other portions of the neighboring tissue, while at others they are formed mostly of capillary bloodvessels and loops of nerves. They are a morbid development of existing tissues instead of a growth of abnormal substance. These tumors are often observed, particularly the more dense and light-colored varieties, without giving origin to any symptom that would lead to their detection; on the other hand, in many instances, they often produce the most excruciating suffering. The kind of caruncle that has seemed to me to be the important one is the blood-red tumor projecting from the mouth of the urethra and attached by a small neck. A few weeks since I met with one of these of crescentic shape, attached by a neck that arose from the concave margin, and had its other attachment inside the urethral orifice. It would not have weighed two grains, but it caused agonizing symptoms. It must not be supposed that all of the varieties will not occasionally cause great pain. The symptoms of their presence are almost always connected with the evacuation of the bladder and attempts to handle the part. The passage of urine causes the most excruciating suffering from pain and tenesmus, the patient often straining for several minutes after the complete discharge of the urine. The slightest touch, also, is the cause of great pain. The diagnosis cannot be clear without an ocular examination. If the parts are exposed to a good strong light, and the labia separated, the excrescence will be at once discovered, unless it be quite inside the urethra. If any doubts exist, we should introduce the finger into the vagina, and press the urethra forward. It is difficult to say, with truthfulness, what are the causes of these carunculæ. My cases have been in patients obviously deficient in cleanliness. This seems to have been the case in that which came under Dr. West's observation.

The treatment is simple, and consists in two main objects: 1st, the removal of them; and, 2d, the production of a profound impression upon the point of origin. In fact, the tissues from which they spring should be destroyed to a slight depth. The first object may be most readily gained by snipping off with scissors; and the second by holding caustic potassa, or the actual cautery, to the place until the nidus is destroyed.

Vascular Urethra.

Analogous to the caruncle is the vascular urethra. It gives rise to the same train of symptoms, though not so intensely distressing, and is very persistent. It occurs more frequently in patients near the climacteric period, although I have seen it in much younger persons. When the labia are separated, and the parts exposed to a good light, the urethra is seen to be patent, and the tissues around the orifice swollen and of deeper hue than usual. The mucous membrane of the urethra is of an intensely scarlet color, and, upon minute inspection, the vessels may be seen enlarged; it is very tender and sensitive to the touch, slight contact producing exquisite pain. There is great burning and sense of cutting when urine is voided, and all the symptoms, even the sympathetic nervous derangements, attendant upon caruncle. This condition is not incipient caruncle, for there is no elevation, no protrusion, and the condition lasts for years without material change of substance. The treatment I have found most effective is strong nitric acid or caustic potassa applied cautiously to the membrane inside the urethra.

I have not tried the actual cautery, but believe it would be very effective. An application of the acid on a piece of lint moistened by it to the whole membrane in sight every ten days, for two or three times, generally is sufficient; sometimes once only is required.

Hypertrophy of the Clitoris and Nympha.

It is very rare that we meet with hypertrophy of these organs without morbid change in the tissues. There is either cystic development in their substance or degeneration of the membranous tissues. The two diseases that seem to contribute most frequently to this enlargement are syphilis and elephantiasis.

Treatment.

Removal by the thermocautery.

CHAPTER IV.

DISEASES OF THE BLADDER.

Paralysis of the Bladder.

PARALYSIS of the female bladder is often an accompaniment of hemiplegia or paraplegia from cerebral or spinal affections, and becomes a part of that more extensive affection. From my own observation, however, I should say that in women, retention of urine in such cases is not so uniformly a troublesome symptom as it is in the paralysis of men.

Women have paralysis of the bladder more frequently associated with hysteria, probably, than with cerebro-spinal disease, which condition, of course, is a part of the hysterical affection.

Again, paralysis of the bladder may arise from reflex causes. I once knew an instance caused by the presence of a tapeworm.

Still more frequent is the paralysis succeeding tedious, difficult, or instrumental labor, as the result of injury to the muscular structure of the bladder from long-continued direct pressure on the organ, or to the nerves supplying the bladder, by the use of instruments, or by long-continued pressure of the head. The inflammation succeeding labor may also affect the organ sufficiently to cause paralysis.

Prognosis.

Usually paralysis occurring as the result of labor is temporary and amenable to judicious treatment, if it does not spontaneously subside. Unfortunately, however, this is not always so. I know of two instances that have resisted such management as could be devised for them by several able practitioners, one for twelve years and the other for seven years. Both of these patients use the catheter for themselves when there is an accumulation of urine.

Symptoms.

The main symptoms indicating paralysis of the urinary bladder are inability to pass urine and distension of the organ. The retention is not always absolute; in some instances the urine dribbles away constantly by drops, keeping the clothing wet.

The patient and inexperienced friends often believe that there is incontinence instead of retention, on account of this continued discharge. In other cases, however, where the paralysis is more profound, there is no discharge. The distension sometimes becomes very great, extending beyond the umbilicus half way to the ensiform cartilage.

Retention of the urine sometimes occurs as the effect of inflammation of the urethra. This canal becomes so sensitive to the passage of that fluid through it, that the sphincter closes spasmodically when there is any attempt to urinate.

Diagnosis.

Paralysis of the bladder may be diagnosticated without much difficulty generally. The patient is conscious of inability to exert sufficient power to expel the urine, but often has no sensitiveness or pain upon voiding it.

The hysterical form is usually attended with other symptoms of this affection, appears quickly and disappears as suddenly, while the urine is copious and clear. There is something in the manner of the patient which will often lead the inexperienced to think that she desires to have it drawn by the catheter.

Cases resulting from injury at the time of labor may be traced to that event.

Treatment.

Treatment for temporary relief will consist mainly in the use of the catheter. I think this instrument is generally used at too long intervals, especially in the form arising from injury during labor. I have often known cases of this kind to be neglected for twenty-four hours at a time.

As a general rule, to pass the catheter every six hours is not too frequent. The muscular fibres should not be stretched by a considerable and prolonged distension, as that will prevent them from recovering their tone. And if the organ is kept well emptied, there is no danger of decomposition of the urine and the consequent irritation and inflammation of the mucous membrane. An intelligent nurse can be taught to perform catheterism very easily, and may be trusted to do so according to instructions as to time and other circumstances.

If the paralysis is connected with any general condition, as hysteria, this latter should be attended to by general treatment.

If the paralysis is general, the vesical affection will share in the general treatment of that affection.

The general health is usually impaired even when the paralysis is purely local in its origin, and often it is one of prostration. When this is the case, generous diet, exposure to and, when practicable, exercise in the open air, with tonics and proper alteratives, will be indicated. Strychnia, quinine, and iron, separately or combined, will be useful remedies. The strychnia is particularly indicated as giving tone especially to muscular fibre and hence operating favorably on the debilitated tissue of the bladder. Phosphoric acid is also usually an excellent tonic in such cases. The bowels should be kept in a soluble condition by the gentlest of laxatives.

When there is evidence of inflammation of any of the pelvic viscera, we should remove it by the proper means before resorting to direct remedies to remove the paralysis. After all inflammation is removed, if there is any, we may employ electricity to stimulate the muscular fibres to contraction. An electro-magnetic current may be passed through the bladder in various directions, so as to stimulate all the fibres successively, applying the positive pole over the spine and across the posterior part of the loins, iliac and sacral regions, while the negative may be brought in contact with the symphysis, perinæum, and labia, and a catheter introduced into the urethra and passed slowly into the bladder. The whole of this faradization should not last more than five minutes at first, and should be repeated once a day. After the patient has had three or four sittings, the force of the current and the duration may be gradually increased. It is sometimes very beneficial to pass the current from the anterior part of the abdomen into a metallic speculum in the vagina. I have seen many cases yield to this plan of treatment. A remedy that seems to have a very ready effect, and to which I think I may attribute a cure in some cases, is the secale cornutum. The fluid extract of ergot administered in decided doses, once in a half hour for four or five doses, when the bladder is somewhat distended, often acts very promptly. A good way to administer the ergot is to induce decided ergotism, or give enough for that purpose every day and suspend the remedy in the intervals. I have been in the habit, also, of administering biborate of soda in doses of twenty grains four times a day with benefit. It is probable that all the substances that induce uterine contraction will influence the bladder similarly.

Hæmorrhage from the Bladder.

A bloody discharge from the female bladder, not the result of organic lesion of that viscus, is far from infrequent. It occurs more frequently, judging from my own observation, about the time of the menstrual period and in persons whose flow is small in quantity. It is seldom, if ever, sufficiently copious to cause alarm, and the treatment of it may be trusted to the remedial measures required for the accompanying disease, whatever it may be.

Hyperæsthesia of the Bladder and Urethra—Irritable Bladder and Urethra.

An irritable condition of the bladder and urethra is a very common occurrence among women, and is sometimes very distressing and persistent. The symptoms are frequent desire to urinate, with the discharge of but a small quantity at each time, vesical tenesmus, heat and weight, together with a scalding sensation at the time of passing the water. This irritable condition may sometimes last, with varying severity, for weeks and even months without being attended with any considerable amount of apparent disease in the parts.

Causes.

It is many times associated with inflammation and hyperæsthesia of the vagina, with chronic metritis in some of its various forms, with displacements of the uterus, and irritation of the rectum from hæmorrhoids, fissures, etc. But sometimes we meet with it when we can assign no cause whatever.

Treatment.

When it is possible to discover and remove the cause, that, of course, should be done. It will often subside under the treatment for the vaginitis that often attends it, or that made use of to remove ulceration and inflammation of the cervix uteri. So, also, when displacements are corrected, when we cannot trace it to any of these causes, the urine should be examined, and if found of strong acid reaction this condition should be corrected. This irritable condition of the bladder is quite common in women advanced in age, as the result of a highly acid state of the urine, and may generally be relieved by the alkalies, of which the preparations of potassa are probably the best. The liquor potassæ, in doses of from ten to fifteen drops, before and after eating, is often very efficacious. In young women of sedentary habits the vegetable acids will often improve the condition of the urine and render it less irritating. In either case the bitters may generally be given with advantage. There are some medicines that seem to have a peculiar influence upon the urinary organs, and may often be given in cases of this kind with great benefit. Among such are pareira brava, buchu, and uva ursi. The fluid extracts of these medicines are the most convenient forms for administration; but sometimes the extracts are not good, and hence I have been in the habit of relying more on the decoction than any other form. I often combine the buchu and uva ursi with, I think, excellent effect. When the distress is considerable we may very properly use belladonna suppositories, per vaginam, at night. A half grain of the extract in cocoa butter, the same amount of sulphate of morphia, will often quiet the patient and enable her to rest, when otherwise she would be annoyed by frequent desire to urinate. Vaginal injections of tepid or warm water often relieve the suffering, so do hip-baths and water compresses over the lower part of the abdomen.

Chronic Inflammation of the Bladder.

Although women are subject to acute cystitis,—probably not as often as men,—there is nothing in the course of the disease, or the treatment, that requires special consideration in a work of this kind. The chronic form, however, so far as I can judge from my own observation, is more frequent in women than in men, and its course and treatment are both, in some respects, quite different, so that I am induced to give it distinct consideration here. It often complicates the various diseases of the uterus and vagina, and the displacement of these organs. It is also caused by foreign bodies in the bladder, as calculi, and substances introduced from without.

Nature and Progress.

In the beginning the inflammation in most cases is confined to the mucous membrane; after awhile the muscular tissue becomes affected. In the early stage of the affection, while the inflammation is confined to the mucous membrane, the bladder empties itself completely but with great pain. As soon as the muscular structure is injured by the processes of inflammation, especially by the deposition of fibrin, the walls become thickened and uneven, contraction is imperfect, and hence the urine is retained, at first in small quantities and afterwards in larger; decomposition of this fluid takes place, the inflammation is aggravated, and ulceration follows in many instances; the patient sometimes dies from protracted suffering, or life is suddenly terminated by the ulceration perforating the wall entirely and causing fatal inflammation in the peritoneum or cellular tissue. Occasionally the inflammation spreads to the ureters, and through them to the kidneys. The urethra may or may not be involved in the inflammation. Generally the cystic portion is more or less affected, and the ulceration in this direction will, in extremely rare instances, perforate the vesico-vaginal septum and thus cause fistula. The inflammation from foreign bodies contained in the bladder would be more likely to effect this condition than inflammation arising from any other cause.

Symptoms.

Dysuria, if not the most frequent symptom, is certainly one of the most frequent. The presence of even a small quantity of urine in contact with the inflamed mucous membrane irritates and causes a desire to evacuate it. There is also heat, a sense of weight or dragging in the loins, the region of the bladder, and in the pelvis, with a great amount of general suffering; constipation, indigestion, sometimes nausea, and various nervous symptoms being among the general symptoms.

The urgency of the symptoms will depend, in a great measure, upon the amount of inflammation, but somewhat also on the constitutional peculiarities of the patient. The frequency of the discharge becomes very great, as there is constant pain and desire to urinate on account of the irritating character of the urine. With the urine is discharged a large amount of mucus, and as the disease advances pus and blood globules are found in the urinary sediment. The appearance of the sediment is almost characteristic. It occupies the bottom of the vessel, is pellucid, tinged with yellow if there is pus in it, or red if it contains blood-corpuscles, and when poured out either comes in a jelly-like mass or in long strings of mucus that may be drawn out to great lengths. At the bottom of the sediment are usually found an abundance of the phosphatic salts. As the disease advances, the odor of the urine becomes highly ammoniacal and not unfrequently fetid. Generally the odor is quite unnatural.

Diagnosis.

The *diagnosis* is not difficult. The sediment of the urine, under the microscope, will show the presence of pus-globules in grave cases, and sometimes blood-globules. When pressed upon above the pubis the bladder will be found tender. This tenderness will be more evident upon introducing two fingers into the vagina and elevating the bladder upon them, while pressure is made above the pubis. The bladder may be thus included between the two hands. The tenacious ropy sediment, the pus and blood globules, especially the former, and the tenderness of the bladder upon bimanual pressure are the main diagnostic symptoms.

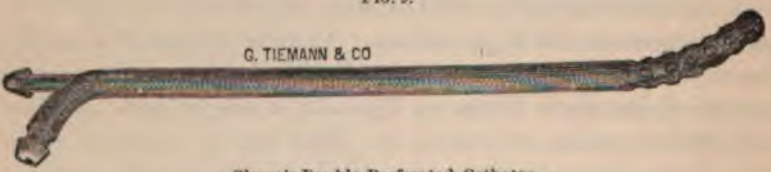
Prognosis.

Chronic inflammation of the bladder is an obstinate disease, and is very difficult of cure; yet it probably does not often prove fatal.

Treatment.

The complicating conditions—as the disease is associated with others in the majority of instances—should be attended to with great diligence. The pelvic viscera are so near each other that inflammation seldom exists in one for a great length of time without spreading to others. I believe this affection is often the result of extension from the vagina or uterus, and in many instances it arises from pelvic peritonitis and cellulitis. Many of the remedies used for the cure of one of these affections will benefit the others also. The use of the hip-bath once or twice daily, copious warm-water injections as often, poultices, compresses, iodine ointment, vaginal suppositories, —of anodynes especially,—will all have the effect of relieving intrapelvic hyperæmia and hyperæsthesia. Counter-irritants of a decided character may frequently be made of great service. One or two setons introduced just above Poupart's ligament, in one or both sides, are very effective means of making it. They may be controlled better than blisters or eruptive irritants. We have a number of articles in the materia medica that exert a curative influence by contact with the mucous membrane of the bladder. They are eliminated from the blood by the kidneys, and held in solution or suspension in the urine, thus becoming applied to the diseased surface. Probably chief among these is pareira brava. I think the best way to administer this is in decoction, although the fluid extract, *when properly made*, is a good form; buchu, uva ursi, and juniper, are also very useful. I think more good, in most cases, results from the use of buchu and uva ursi together than from either alone. Iodide of potassium, permanganate of potash, and some other salts of this alkali, the acetates and nitrates for instance, exert an excellent alterative effect upon the mucous membrane of the bladder. The terebinthinates may be used with great advantage in the milder forms of this inflammation. Perhaps balsam copaiba is the most uniformly beneficial of this class of remedies. Cubebs may also be employed occasionally with good effect. The above treatment is applicable and often sufficient in the earlier stages and milder forms of chronic inflammation of the bladder; but after contraction of the organ is impaired by the extension of the inflammation to the muscular structure, surgical treatment becomes indispensable to a successful issue. It is necessary that the acrid urine be completely removed from the bladder before it enters into chemical decomposition, which it does very quickly. At the same time the direct application of medicine to the inner surface can and ought to be made, while alterative and tonic general treatment is instituted to overcome interstitial inflammation and remove the fibrinous deposit. Often we may accomplish the processes of emptying the bladder and applying the medicinal agents by means of the double catheter. To insure the efficacy of these measures the organ may be washed out by warm water thrown through the catheter by a Davidson syringe, and after all the urine is washed out the medicinal solution may be introduced, and allowed to remain until its action is accomplished. When there is much pain a quarter or half grain of morphia once in twenty-four hours will secure immunity from suffering. We may combine with the morphia a solution of iodide of potassium, permanganate of potash, tannic acid, acetate of lead, or other astringent; or we administer in the same way a small amount of an emulsion of balsam copaiba. Nitrate of silver will also frequently cause a better condition of the inflamed surface. The ingenuity and experience of the practitioner will generally suggest remedies of the above character best suited to the particular case. Due caution must be observed not to use the remedies in too concentrated strength until the tolerance of the inflamed surface is ascertained. These medications should be applied once a day at first, and afterwards as often as may be required. It should be borne in mind that the mucous membrane of the bladder is very sensitive and that medicines are readily absorbed by it. In connection with this surgical treatment ergot and strychnia may be given to insure tone in the muscular structure. They ought not to be administered, however, until the activity of the inflammation has somewhat subsided. Dr. J. L. Papin, of St. Louis, has practiced a plan for relieving the irritable and inflamed condition of the bladder by dilating the urethra so as to

FIG. 9.



Skene's Double Perforated Catheter.

paralyze the contractile fibres and leave the canal patulous, thus allowing the urine to pass out as fast as secreted, instead of permitting it to remain in the bladder to irritate it. The treatment is described in a paper written by Dr. M. Yarnall for the January (1872) number of the *Medical Archives*, published in that city. The operation is thus described: The urethra is dilated "with a long pair of dressing forceps to such an extent as to produce a temporary incontinence of urine, by rupturing a few of the fibres of the sphincter of the bladder, and repeating the operation when necessary, at intervals of a week or more, until the patient is completely relieved." Twenty cases are mentioned as having been treated in this way, and the report is: "In nearly every instance the relief afforded is almost immediate; but in the course of a few days the irritability of the bladder usually returns, when the operation has to be repeated, and, if necessary, again repeated until a cure is accomplished." In one case the operation was repeated five times, in some others three and four times. The experience of Dr. Papin is such that he does not fear incontinence of urine. "The operation being at first very painful, it will usually be found necessary in performing it the first time to place the patient under the influence of an anæsthetic; but its subsequent performance being much less severe, as a rule the anæsthetic will not be necessary, unless the patient be of a very nervous temperament." This dilatation will much facilitate the use of medicated injections and preclude the need of a double catheter.

This operation is very simple, and, according to the report of Dr. Yarnall, very efficacious.

I have practiced dilatation of the urethra quite frequently with results not inferior to those here reported.

I invariably use the finger in place of any other instrument. One of the dangers of dilatation of the urethra is laceration of the circular fibres of that canal, and consequent incontinence of urine. I have not met with an instance of this kind, nor have I seen any other serious consequences follow dilatation. The finger may be passed through so slowly that the fibres will stretch, and endowed as it is with a delicate sense of touch, it easily recognizes the unyielding tension which indicates care. In this it would be entirely preferable to any kind of instrument. Compressed sponge or laminated tents dilate so slowly and remain in contact with the canal so long as to induce inflammation and softening of the muscular fibres, and instead of preparing the way for further safe dilatation would predispose to laceration.

Dr. Goodman, of Louisville, uses a catheter with a small bulb on the vesical extremity of it, with which he secures an empty state of the bladder.

Dr. Sims's well-known practice of incising the vesico-vaginal septum has for its support the favorable report of its distinguished originator and Dr. Emmet, his successor in the Woman's Hospital of New York. The latter gentleman has written, and read before the Academy of Sciences of New York City, quite an elaborate paper advocating the propriety of making a fistula through which the urine will pass without accumulating in the bladder, and through which very effective medicinal application may be made to the inflamed surface. The patient may be placed in the position advised to operate for vesico-vaginal fistula, and the parts exposed by Sims's speculum. The surgeon may then pass a grooved director into the urethra with the groove toward the vaginal septum, and cut down upon the director until an opening is made large enough to answer the purpose. There is probably more danger of having the opening too small than of getting it too large, as the parts contract and have a strong tendency to close up before the cure is effected. The opening should be about an inch in length. With this free communication with the interior of the bladder the medication may be complete Tincture of iodine, a solution of nitrate of silver, and the various astringents may be applied through the artificial opening. The injections for washing out the bladder can be used with such freedom as will insure cleanliness. Dr. Emmet assures us that this method of treatment has been almost uniformly successful in his hands. The operation to cure the fistulous communication between the bladder and vagina is so well understood and so generally successful, that the surgeon will not dread the consequences of this plan as it would have been dreaded some years ago, and I need hardly say that the opening should not be closed until the inflammation is entirely cured. It often closes spontaneously.

Stone in the Bladder.

Vesical calculus in the female is of very rare occurrence, absolutely and relatively. Of all the cases of vesical calculus only about one in twenty is met with in the female sex. This may be accounted for by the size, straight form, and dilatability of the urethra, and consequent direct escape of small sanguineous and mucous accumulations, and even sandy concretions. Indeed, quite large stones are expelled through the urethral canal, making their way out, in some instances, in a few moments with acute suffering, while in others they are many hours in forcing a passage. It would seem that these hard substances are evacuated more readily during the state of pregnancy than at any other time; doubtless, because of the urethra partaking in the general increased dilatability of the genital organs which precedes labor.

Symptoms.

There are probably no symptoms attendant upon stone in the bladder in woman but what are produced more frequently by other causes, hence they are quite unreliable, and can be taken only as suspicious instead of diagnostic evidence of its presence. They are great and persistent irritability of the bladder, severe pain after voiding the urine, sudden cessation of the flow while there is yet a desire to urinate and evidently some fluid in the organ, enlargement or relaxation of the urethra, and incontinence of urine. The urine is also charged with mucus, pus, or blood, or all three of these in greater or less quantities. The symptoms will be more strongly marked if the calculus is rough and jagged in shape, and less so if the surface is smooth and even. All these symptoms are not present in any given case, but some of them are certain to be prominent and very distressing.

Diagnosis.

The only way to positively determine the diagnosis is by physical examination of the cavity of the bladder. This is done by means of the fingers and the sound. If two fingers be passed deeply into the vagina, as far as the cervix uteri, the most dependent part of the bladder may be pressed strongly up against the internal face of the pelvis, or lower portion of the anterior abdominal wall. If this latter be pressed well down into the pelvis with the other hand, while the fingers are still in the vagina, careful manipulation will scarcely fail to distinguish a calculus of moderate size. When the bladder is full of water, if the calculus is large, it may be raised and its presence pretty conclusively determined by *ballottement*. The stone is felt, however, more distinctly through the urethra by the sound, used the same as in the male. The operation may be facilitated by the fingers in the vagina moving the stone around. The same difficulties in preventing or making difficult and perfect diagnosis are met with, as in the male, if the stone be encysted or adherent to the upper or anterior wall of the bladder; but if the instrument is sufficiently curved and moved about in various directions it will be detected, and its position and size ascertained with more precision and certainty than in the male.

Treatment.

The only means of relief available is the entire removal of the calculus. This may be done by dilating the urethra, and extracting through it; by lithotomy or lithotrity. All these operations are less hazardous in the female than in the male, in fact, we scarcely take the subject of danger to life into consideration in operating for stone on a woman; but one very great inconvenience likely to follow dilatation of the urethra and lithotomy is incontinence of urine, and the attention of recent operators is turned mainly to the matter of avoiding this most distressing sequel. The preference is given by some surgeons to lithotomy, because they think this evil less frequent after it, while for the same reason others resort to dilatation of, and extraction through, the urethra. Very few now practice lithotrity in the female, and this operation is looked upon as attended with more hazard than either of the others. It is astonishing with what facility the female urethra may be largely and rapidly dilated. I have seen it stretched so as to admit the index finger in ten minutes without violence to its integrity. Where the stone is not very large, not over half an inch in diameter, we may expect to succeed by dilatation without much damage if proper caution and gentleness are used. When the stone is much larger, and especially if it is rough, we should cut.

The operation of dilatation is simple. It may be performed by the finger more readily and safely as directed in chronic inflammation of the bladder. As soon as the finger can be made to enter freely the bladder, other fingers should be passed into the vagina and caused to press the stone forward so that its size, shape, consistence, and the character of the surface be ascertained. If there is a long diameter, the end must be directed to the urethral opening, and retained with as much security as may be until the forceps are introduced and the stone seized. Traction should be made in the direction of the urethra with the instrument, while with the fingers in the vagina the efforts may be governed so as to keep up the right direction and steadiness, and also to push the stone into the urethra. Swaying the instrument in different directions, and performing slight rotation, the force used should be very gently applied and slowly increased, giving the parts time to stretch, and no more exerted than is just sufficient to accomplish the extraction. We should not be in a hurry, but take plenty of time; more damage is done by too great hurry than too great dilatation, I think. The parts are torn instead of being stretched. If the stone is too large to be removed in this way, we may perform lithotomy.

Dr. Sims has proposed and performed lithotomy through the vesico-vaginal septum. He exposes the parts as for operation for vesico-vaginal fistula, introduces a curved director through the urethra, and cuts into the bladder upon it until the opening is large enough to permit the stone to pass. The finger is then passed through the artificial opening by which the forceps is guided, the stone seized and extracted through it. The wound is then closed with silver sutures, and the patient otherwise treated as for fistula.

Foreign Bodies

Are sometimes introduced into the bladder by accident or design. Lead-pencils, hairpins, quills, etc., are found in the bladders of hysterical girls. They may be generally easily extracted by dilating the urethra, seizing the substance with strong forceps, and withdrawing them. Several instances are recorded of the open-barred pessaries of Dr. Hodge being removed from the bladder, where they had been introduced by mistake. The practitioner, starting one limb of the instrument into the urethra instead of the vagina, and afterwards manipulating in the ordinary way, would easily pass the whole into the bladder without observing any difference in the passage through the parts. Dr. H. R. Storer, of Boston, has now had three cases of this kind, and others have also met with them. I have seen but one instance of the accident, or rather mistake. In that case the instrument was introduced by an intelligent physician, who was sick and stupefied by opium. As he died a few days afterward there was no opportunity of hearing his account of the matter. The pessary remained in the bladder several months, during which time the patient was married and became pregnant. Three months after conception the instrument was discovered and removed without interrupting gestation. The removal was not attended with much difficulty. The urine was all drawn, and as the bladder emptied and contracted the pessary, coming down upon the anterior wall of the vagina, was distinctly felt, and its shape and size easily distinguished. The little finger was first pressed into the urethra until it passed into the bladder, then the index, by which the end of one of the branches of the instrument was drawn to the vesical end of the urethra. The finger was then withdrawn, and Ricord's phimosis forceps introduced until in contact with the limb of the pessary. To facilitate the prehension of it by the forceps, the index finger of the left hand in the vagina held the pessary against the pubis. In this way it was not at all difficult to fasten the forceps on the end of the limb lying in contact with the neck of the urethra, and to extract the whole instrument. This was done by first bringing the point of the branch seized upon out of the meatus, depressing it toward the perinæum until the angle at the junction with the cross-bar appeared, after which the changes were the same as removing from the vagina. This case was recorded by Dr. Buckley, of Freeport, Illinois, in the *Medical Record*. Essentially the same plan enabled Dr. H. R. Storer, of Boston, to relieve his patients. A foreign body that has been introduced through the urethra can, by this kind of manipulation, be removed through it.

Inversion of the Bladder.

In childhood the bladder sometimes becomes inverted and partially expelled through the urethra. Dr. John Croft, in "St. Bartholomew Hospital Reports," *American Practitioner*, gives the following methods of diagnosticating and treating inversion of the bladder:

> "A small, red, pyriform, vascular, elastic tumor, situated between the labia below the clitoris, and in front of the vaginal orifice; the urethra not distinguishable; the ureters may be exposed, and perhaps distilling urine; a history of more or less incontinence previous to the appearance of the tumor: these symptoms should lead one to recognize an *inversio vesicæ*, and to distinguish such an affection from a solid polypoid growth. Mr. Holmes has described a vaginal hernia in his work on *Diseases of Children*. In that malady the urethra can be found in front of the tumor, which has not the red vascular appearance of an inverted vesical membrane. The best mode of reduction seems to be by taxis, and the thumb and fingers the best compressors. They should be used gently. If the child struggle much, it would be better to employ chloroform."

A properly constructed compress will retain the parts in position until the urethra attains its normal tone.

CHAPTER V.

AFFECTIONS OF THE VAGINA.

Absence of the Vagina.

WE observe absence of the vagina when the tissues and organs in near relations to it are in one of two conditions: First, when the rectum, bladder, and vagina are all absent and replaced by one great cavity, through which the urine and fæces are passed. This cavity is called by authors cloaca, being a common excretory canal for the urinary, genital, and alimentary organs. Sometimes the vagina is imperfectly formed, and the rectum perforates it posteriorly, while the urethra enters it anteriorly. Secondly, the vagina may be absent while the rectum and bladder are properly situated, perfect in their formation, and the anus and meatus urinarius both also occupying their normal places and performing their functions properly. In this last condition of the parts the vulval organs are generally all present; in one case the hymen was to be seen. In by far the most instances there is an absence of the uterus when the vagina is not found, but this is not always the case. I feel confident of having seen two cases in which the uterus and vulva were normal.

Causes.

Absence of the vagina is, of course, always a congenital condition.

Diagnosis.

In cases where there is a common cavity for the rectum and bladder, we shall have no difficulty in ascertaining it by inspecting the parts with the eye and passing the probe into the rectum and bladder if necessary. The discharges, however, will generally enable us to decide without this last measure. When all the adjacent organs are normal, we are to distinguish between occlusion by an abnormal hymen, rudimentary vagina, and this condition.

Physical examination alone will enable us to do this. We shall not often be called upon to determine the question of diagnosis until there is a collection of menstrual fluid in the cavity of the uterus, or the patient is married.

When there is occlusion by the hymen, with a collection of fluid in the vagina, the vulva will be occupied by a tumor formed of the pouting membrane, generally of a dark-purple color and hemispherical in shape, giving the sense of fluctuation when pressed upon at the time the hypogastric region is percussed. When the vagina is absent, there will be a tumor perceptible between the bladder and rectum, but no protrusion between the labia. The ordinary sign so often mentioned of a cordlike hardness extending from the vulva upward is of no use, as this is obscured by the globular mass between the rectum and bladder. In one case recently under observation the uterus was absent, and the rectum and bladder seemed to be in immediate proximity.

The *treatment* of absence of the vagina will be given in the treatment of atresia.

Atresia Vaginæ.

This condition arises very much more frequently from puerperal inflammation of the vaginal parietes than any other cause. But anything that produces inflammation enough to destroy the epithelium of the mucous membrane may cause atresia, as mechanical or chemical agencies, scarlatina, measles, syphilis, etc.

After extensive ulceration from these or other causes, if the denuded surfaces are allowed to remain in contact and at rest for a time, they contract adhesions, thus narrowing, or even at times completely closing, the cavity. In atresia occurring as the effect of inflammation every variety may be observed. The vagina may be closed at the vulva and not above, the centre may be contracted and the upper and lower ends be of normal dimensions, or the adhesion may take place at the upper part, including or not the os uteri. In all these varieties, however, the parts not involved in the ulceration are but little affected. Atresia may also be a congenital defect in the organization. Congenital atresia is more frequently caused by the formation of a membrane across the cavity, closing it in some part, as the hymen occasionally closes the vulva, and which is often so low down as to be confounded with that membrane. Such a closure, however, is usually farther up the cavity, sometimes near the os uteri. Partial congenital atresia is sometimes represented by a very narrow canal, only large enough to admit a probe, and which seems a very imperfect outlet for the menstrual discharge, and is so small as to prevent sexual intercourse. This form of atresia may be complete and "the organ changed into a solid cord," extending in part or the whole of its length.

Diagnosis.

Judging from my own observation we are more frequently called upon for a diagnosis in atresia after puberty than before. Previous to puberty the closure of the external opening to the vagina would be the only condition likely to lead to its discovery. The diagnosis in such cases is of little importance compared to what it becomes after adult age, as the defect does not interfere with the function of the organ. The failure in the appearance of the menses at the proper time in life, pain in the pelvic region, and enlargement of the abdomen generally cause physical investigation. If it has originated in ulcerative inflammation, the retention of menstrual fluid, pain, and enlargement would soon excite suspicion; or, if the patient is married, the husband would be likely to discover the unusual state of things. Practically a very large majority of the cases we meet with will be attended with an accumulation of fluid. The history of the case, the fluctuating tumor between the bladder and rectum, felt by the finger in this last cavity and the catheter in the first viscus, and the presence of some part of the vagina in a distinguishable condition will enable us to decide as to the nature of the difficulty.

Prognosis.

There are very few cases of acquired atresia which do not admit of more or less complete relief. Congenital atresia with membranous formation across the cavity is generally curable, and when the vaginal cavity is so contracted as to be nearly, but not entirely obliterated, we may hope for a cure, but when it is attended with defective development of the other genital organs we may expect much difficulty, even if a cure be practicable.

Treatment of Atresia and Absence of the Vagina.

The object of treatment is to overcome the obstruction to the discharges from the uterus by surgical means. The vagina is a viaduct for the uterine discharges. In this word, to be sure, is not expressed all the uses of that organ, but to make it an efficient channel for the menses is really almost the only reason for operations in the graver varieties of vaginal atresia. We are not, therefore, justified in submitting our patient to the dangerous operation of opening up the vaginal canal for any other purpose. In cases, therefore, in which the uterus is absent we are not justified in attempting to form an artificial vagina, or in any way endeavoring to perfect the organs for conjugal purposes merely. I have known but one attempt of this kind, and in that case no success attended the persevering and ingenious efforts of Dr. Brainard. The patient was a married woman, who said she assumed matrimonial relations without knowing that she was not like other women. The vagina terminated in a cul-de-sac about an inch in depth. Her husband complained of her incapacity to fulfil the duties of a wife. They visited Dr. Brainard for surgical aid, and he had the kindness to allow me to witness his operations. Although the artificial canal that resulted from his efforts was two inches in depth, it had a constant tendency to contract, and required the steady employment of a glass plug to keep it open. The husband was not satisfied and the law allowed him to separate from her.

The occlusion should not be operated upon until the menstrual fluid fills up the uterus and distends the parts between its cavity and the vulva. Ordinarily, when the vagina is absent, the uterus is bound by areolar and fibrous tissues to its usual situation in the pelvis, and as distension occurs the lower portion of the organ approaches very near the vulva,—in two instances of absence of the vagina it was not more than an inch and a half from the vulva. In thus approaching the external organs it widely separates the bladder and rectum; pressing the former up behind the pubis, and the latter strongly into the hollow of the sacrum.

This condition of things makes an operation for the opening of the vagina, or making an artificial canal, comparatively easy and safe. To attempt to reach the uterus of a girl before puberty has established the menses, by cutting up toward that organ from the vulva, is to undertake a task of very great difficulty and hazard, which, after the distension has brought about the changes above described, may be accomplished with great certainty and facility and much less risk. Much delay, permitting of great distension, should also be avoided, for Puesch tells us that in 258 cases of atresia 18 died of rupture of the Fallopian tube.

The right time, then, to operate for complete atresia is as soon as the uterine tumor fairly fills the pelvis, and when by touch through the rectum with the finger, with a catheter in the urethra, we can assure ourselves that the uterus can be easily reached without endangering any important organ.

Scanzoni was so impressed with the danger of wounding the bladder and rectum that he advises evacuating the imprisoned menstrual fluid by introducing a curved trocar, of large calibre, into the rectum, and plunging it into the most dependent part of the tumor. After the flow of blood has ceased, the canula should be left in the place for some time in order to establish a permanent opening. I think the danger of this operation is overestimated by Scanzoni, and cannot recommend the student to follow his teaching. With the precautions as to time and circumstances, and the proper care, the hazard is much less than he has estimated it. The patient may be placed in the lithotomy position, a catheter introduced into the bladder and a finger into the rectum. The catheter will be directed strongly up behind the symphysis pubis, and the finger pressed firmly back against the sacrum. These preliminary measures being instituted, an exploring trocar may be passed into the central line of the vulva about half an inch below the urethral orifice, and pushed backward into the tumor. If the trocar has entered the cavity containing the menstrual fluid, this will begin to pass the canula upon the withdrawal of the stilet. When thus assured of the right direction, we may be guided by the trocar in an incision that should be run along the lower side of it, until the opening is large enough to press the forefinger through it. With this member we may tear the opening large enough to admit the middle finger with it. Through this opening the blood will soon be evacuated. As soon as this is the case, the cavity of the uterus and vagina ought to be thoroughly cleansed by tepid water thrown plentifully through a tube long enough to reach to the fundus. The artificial opening thus made must be kept open by confining a glass plug large enough to keep it patulous. This plug should be worn for several weeks and recourse be had to it when retraction threatens to obliterate the canal.

Hewett recommends tearing through the obstructing tissue instead of puncturing or cutting. Others dissect through with the knife. Dr. Emmet advises us to use the scissors for incision into the tumor. And, again, a large trocar sometimes is used to penetrate the cavity at the point I have directed, and the finger used to enlarge the opening made by it. It happens in some cases that severe symptoms follow this operation for the sudden evacuation, such as peritonitis, metritis, etc. Dr. Sims, to avoid this, evacuates the fluid very slowly, allowing the uterus to contract on the receding fluid as fast as evacuated.

In cases where a membrane closes the vaginal canal, the considerations above stated should induce us to wait until there is a moderate accumulation of menstrual fluid in the vagina. The division may then be made with scissors carried up to the membrane. The opening should be free. Not much danger will exist of cicatricial contraction closing up the divided part, yet for several days the finger should be passed above the obstruction daily to prevent any tendency of that kind. When the vaginal canal is contracted to very small dimensions, amounting to almost complete atresia, we may dilate this small opening by introducing sea-tangle tents or metallic bougies graduated in size, the smaller first and larger afterwards. Sponge-tents may be used after the dilatation has been fairly begun. Perseverance in the use of tents will enable us to succeed without cutting, and I would very much prefer it to any other method of procedure.

Tumors in the Vagina.

Fibrous tumors in the vagina are occasionally met with. They are generally less firm, although resembling in most other respects the fibrous growths of the uterus. They grow in the anterior wall of the vagina so as to project into the bladder and vagina to about the same extent, or more or less in either of these cavities, according as they are developed nearest the membrane of the one or the other. Sometimes they are pendulous or polypoid, hanging into the vaginal cavity by a neck of greater or less size. All I have seen of the intramural form of these tumors were encysted, and were removed by excision. The cyst was opened and the tumor turned out and the wound allowed to close by contraction and granulation. The polypoid form may be removed by the écraseur or ligature. The écraseur is very much to be preferred. Fatty encysted tumors of the vagina are more rarely met with, and may be dissected out, in the same manner as if situated elsewhere.

Vaginismus.

Dr. Sims described this affection first to the Obstetrical Society of London, December, 1861, and has since given it to us in his *Clinical Notes on Uterine Surgery*. It is an "hyperæsthesia of the vulva and hymen, attended with involuntary contraction of the sphincter vaginæ." The parts are so very sensitive that the slightest touch with the finger causes great pain, and in some instances, coition is entirely impracticable. In all the cases I have ever examined, there was very decided redness and increase of the secretion of the parts exposed by separating the labia. Dr. Sims thinks that the sensitiveness is confined to the vulva and hymen, but I apprehend that more extended observation will convince him that the whole vagina is often involved. In one of my cases, now under treatment, the sensitiveness of the vulva has almost entirely disappeared; the finger may be introduced into the vagina, but the upper part of this cavity is so exquisitely tender that the patient screams with pain as the finger approaches the cervix uteri.

The general symptoms of this affection are grave according to the chronicity of the case. It generally shatters the constitutional energies of the patient, rendering her, according to the expression of Dr. Sims, a wreck. Dr. Sims says it is independent of inflammation. Mr. I. B. Brown agrees with him. It is, according to them, mere hyperæsthesia. In my cases the parts were always in a state of inflammation; but I cannot think the hyperæsthesia was wholly of inflammatory origin. Of course I am not prepared to say that inflammation is even a general attendant. The observation of the profession will soon determine that point, as the disease is now fairly set before it, and, from its distressing symptoms, will attract much attention. My patients have apparently not been aware of their condition until married. The intensity of the suffering is not always sufficient to prevent coition, and sometimes is much greater than others. The sensitiveness is greater near the menstrual epoch, occasionally in a very marked degree. My patients have all been barren.

Diagnosis.

The sensitiveness and contraction are characteristic, and hence there is no need of much labor in forming a diagnosis. The least touch of the mucous membrane of the vulva, with a feather, soft brush, or fingers, gives the patient great suffering, and sometimes agony unlike anything else.

Prognosis.

Judging from all I have seen and read upon the subject, there is very little, if any, tendency to spontaneous subsidence. Its duration, therefore, is perplexingly long. But all agree as to its curability.

Treatment.

Dr. Sims has succeeded in curing *all his cases* by dividing the sphincter vaginæ deeply on either side of the vaginal orifice. He makes the division sufficiently deep to permit of free dilatation, and then keeps the vagina open with large bougies until the wound cicatrizes. The results of this operation are all that might be expected from it. The hyperæsthesia disappears, and the obstacles to coition are removed, but there is necessarily great mutilation. A long time before Dr. Sims wrote on the subject, forcible dilatation was recommended to overcome the spasmodic contraction of the sphincter vaginæ. Perhaps the best and most convenient way to dilate the vagina is to introduce the thumb of each hand into the vagina, with the palmar surface turned outward, and then forcibly separate them as far as possible. This will stretch the vulva, but not often rupture the muscular fibres to any great extent. After thus forcibly dilating, we should introduce the glass plug, recommended by Dr. Sims, twice a day, morning and evening, and allow it to remain each time from one to two hours. The plug ought to be from one to two inches in diameter. The introduction and presence of this hard substance at first gives great pain, and we may be under the necessity ot using anæsthetics or anodynes, to enable our patient to bear it; but after having been several times introduced, the parts tolerate it better, and finally we can use it without giving the patient any great inconvenience. The decreasing sensitiveness thus manifested will be a guide to us in deciding when to discontinue it. Mr. I. Baker Brown, in his *Surgical Diseases of Females*, condemns Dr. Sims's operation as severe and needless, and gives two cases where the sensitiveness was cured by the relief of fissure of the rectum. He thinks the hyperæsthesia is a symptom of some disease of the rectum, generally fissure; and that by incision of the fissures it will disappear. Dr. Braun, of Vienna, according to Mr. Brown, has cured one case by removing the clitoris. A case of some severity is reported in the *London Lancet*, American reprint for March, 1867, in the care of Dr. G. C. P. Murray, in which the hyperæsthesia appeared to depend upon inflammation of the cervix uteri and vagina. It was cured by making a free application of the solid nitrate of silver over the inflamed cervix, and a solution to the vaginal surface. These applications were repeated in a fortnight, and were succeeded by the tincture of iodine. While there can be no doubt that Dr. Sims's plan is efficacious, I cannot think it necessary, and the success of other means by different practitioners bears me out in this opinion. We almost always find the patients in a state of unsatisfactory health, and, according to my observation, evident local disease besides that of sensitiveness; and, from what we have learned from Mr. Brown and Dr. Murray, more than one kind of local disease. As in the treatment of all other diseases, therefore, we should carefully and diligently search for and cure the cause of the hyperæsthesia. If it is fissure of the rectum, this should receive our first attention; if inflammation of the vagina, uterus, or vulva, we ought to cure this.

In all the cases I have seen, and I now have three under treatment, nothing I have tried has been of so much advantage as remedies directed against inflammation of the vagina and vulva. The course I usually pursue is to apply the solid nitrate of silver to the vulva every ten or fourteen days, and in the interval use glycerin and tannin. The first application reduces the sensitiveness very decidedly, and it becomes less after each successive touch, until finally cured. We should bear in mind that the hyperæsthesia does extend into the vagina and to the uterus, and that it is as necessary to treat the vaginal cavity as the vulva. I have been in the habit, at first, of managing it as I would vaginitis. The strong astringents, glycerin and narcotics, applied by means of medicated pessaries and injections, are valuable adjuncts. With the local treatment, rational general treatment is very beneficial. Attention to the bowels, the condition of the stomach, and the secretions generally; tonics, exercise, change of air, bathing, attention to clothing, and all the regimenal circumstances calculated to benefit the general condition of the patient.

Acute Vaginitis

Begins generally in the lower part of the vagina, with swelling, intense redness, and dryness of the mucous surfaces of the labia, vulva, and vagina. There is great heat in the parts, and the patient complains of burning pain in them. Difficult, painful micturition, pain in passing the fæces, sense of weight in the pelvis, and tenesmus are generally present also. Not unfrequently there is backache and pain, radiating down the thighs, into the hips, up the spine, and into the head. Sometimes the symptoms are so acute as to produce general febrile disturbance. When this is the case, there is chilliness alternating with heat, an increased frequency of the pulse, furred tongue, pain in the limbs, etc. In the course ot thirty-six hours the pain, redness, and swelling spread to the whole of the vaginal cavity, and soon there is a profuse secretion of mucus, which, after two or three days, or even sooner, is mixed with pus-globules in some abundance. When this last is the case, the discharge is either green or yellowish in color, and less tenacious. This state of things lasts for from ten to twenty days, when the inflammation gradually subsides, becomes less in quantity and lighter in color, until in four or five weeks the disease is entirely gone, or it merges into the chronic form. The inflammation usually involves the urethra, and sometimes the bladder, and its greatest intensity is almost always in the lower third of the vaginal canal. The inflammation sometimes spreads to the rectum. Sometimes it attacks the mucous membrane of the cervix uteri, and even invades the cavity of the corpus uteri, remaining longer in these localities than in the vaginal cavity.

Diagnosis.

The diagnosis of acute vaginitis is not difficult, as the parts may be easily seen and touched.

Prognosis.

As has been heretofore intimated, it subsides spontaneously, and leaves the parts free from disease, or in a state of chronic inflammation. The prognosis, therefore, is favorable.

Cause.

It is caused by contagion more frequently, perhaps, than anything else, but does doubtless arise from abuses, injuries, and want of cleanliness, and probably other causes. I have seen the non-contagious form in children very much more frequently than in adults, spreading usually from the vulva upwards. Non-contagious acute vaginitis is not a very common affection. At first it involves the mucous membrane and submucous tissue, but before many days it is confined to the membrane alone.

Treatment.

This at first should be slightly antiphlogistic. A few grains of calomel, followed in ten or twelve hours with a saline cathartic, should be the first step. This may be succeeded by nauseating doses of tartar emetic, until the dryness and swelling have subsided. In the meantime, perfect quietude in the recumbent position should be enjoined, the parts bathed every hour or two thoroughly with tepid water, and the patient should abstain from stimulating or nutritious ingesta. As soon as the discharge has become copious, and yellowish or green, and the swelling of the parts has entirely subsided, the treatment should be changed for astringents, specifics, laxatives, and baths. We may give half a drachm of balsam copaiba in emulsion or capsules every six or eight hours, and have the vagina syringed copiously with a saturated solution of alum, or acetate of lead, two or three times in twenty-four hours. Every third day a few ounces of a solution of nitrate of silver, the strength of ten grains to the ounce, may be advantageously used. The bowels should be kept open, and the patient should abstain from stimulants at all times during the treatment. The astringent injection ought to be changed every five or six days, using alum, sugar of lead, and sulphate of zinc alternately. Perseverance in this treatment will very materially shorten the course of the disease.

Chronic Vaginitis.

This is a more frequent form of disease than the acute, and its importance will be understood from this consideration. It is in many instances a very distressing affection, and often mistaken for diseases of the uterus, bladder, or rectum.

Symptoms.

There is generally pain in the back, more frequently in the sacrum and coccyx, but not seldom higher up; pain in the groin, weight and sense of bearing down in the perinæum, dragging in the hips and pelvis. A burning sensation in the vagina, extending all over the lower part of the person, very distressing and depressing, is sometimes the chief symptom complained of by the patient. In married patients it is the cause of distress during the act of coition, to such a degree sometimes as to entirely preclude such indulgence. I am now treating a patient who assures me that although she has been married fifteen years, she does not remember a single instance of sexual intercourse that did not give her discomfort; generally it was the cause of decided pain, and sometimes was entirely intolerable to her. Leucorrhœa is a common, but not invariable symptom; it may be yellow or white in color, but when the case is not complicated with cervical inflammation it is always thin. In chronic vaginitis there is generally a long train of sympathetic symptoms not unlike those observed in diseases of the uterus. The nervous centres are disordered in their functions, and we have nervous symptoms of almost every description. The mind is sometimes affected by it to irascibility, despondency, suspiciousness, peevishness, and purposeless instability. In other or, perhaps, the same cases there is palpitation of the heart and large vessels to such a degree as to cause alarm for the life of the patient. Headache should be mentioned as quite common; it is more commonly located in the occipital region, but may be in the top, forehead, temples, or all over the head. The eyes are generally weak. The stomach is frequently deranged to a considerable extent, and in various ways; and there is generally a constipated state of the bowels, though diarrhœa is an occasional symptom. There often is pain, too, in urinating, and in passing the fæces through the rectum. The uterus is almost always affected, also, and through it the symptoms may become greatly diversified and increased. We should expect this complication.

Diagnosis.

Upon examining the vagina, the introduction of the finger will give some pain, sometimes a good deal, and the speculum causes a great amount of suffering. There is general redness of the mucous membrane; sometimes it is smooth and moist merely, or covered with a copious secretion of mucus; in some instances numerous granulations may be seen. The granulations may be situated at the upper end of the vaginal cavity entirely, as I have often seen, or the lower portion of this cavity may be the location in which they are found; rarely they extend from one end of the vagina to the other. And again the membrane may be so raw as to bleed upon the use of instruments in making the examination. The sensitiveness, redness, and exaggerated secretion are conclusive and diagnostic symptoms when they are permanent.

Causes.

Chronic vaginitis is often the result of an acute attack. The inflammation only partially subsides at the time, and is continued indefinitely. Some of the most obstinate cases I have met with have thus resulted from gonorrhœa. Another set of cases are seen in patients whose husbands were the subjects of syphilis in early life, but who have been to all appearances cured. I am inclined to the opinion that chronic vaginitis is not an uncommon occurrence in women thus situated. It is more likely to follow recent cases of syphilis, and is sometimes subacute in grade. Another form is apparently produced by abortions, colds, and other causes, with, at the same time, inflammation of the cervix uteri. Constipation, causing sluggishness of the vaginal circulation, or other causes producing this vascular condition, as the pressure from pelvic tumors, phlegmonous effusion, etc., contribute to the production of chronic vaginitis. There is no doubt but that certain constitutional taints, as scrofula, rheumatism, and, as before intimated, syphilis, are efficient co-operating causes.

Prognosis.

Chronic vaginitis, in its simpler forms, is apt to be obstinate and resist judicious treatment for years. It is more particularly so when originating in constitutional diseases. When connected with incurable tumors it will, of course, resist all sorts of treatment.

Treatment.

The constitutional treatment of chronic vaginitis is sometimes of the first importance, while at other times it is unnecessary, or nearly so. The variety which seems to be connected with the syphilitic condition requires the alterative remedies which are found beneficial in this affection under other circumstances, the preparations of mercury, iodine, and the vegetable alteratives, for instance. When associated with scrofula, the vegetable tonics, with alterative treatment, cod-liver oil, plenty of outdoor exercise, cold bathing, sea bathing, etc., will be appropriate measures to be employed. As it is not unfrequently complicated with rheumatism, or this diathesis, it may be necessary to prescribe for it with such a consideration in mind.

But in more simple cases, where there are no such taints or complications, conditions exist that require a judicious course of general treatment for their removal before we can be successful in our main object. Such is a torpid state of the bowels and portal circle, with scanty secretions. Mercurial and saline laxatives, vegetable tonics, as the bitters, also alkalies, will, when judiciously used, assist us very much. We should be particularly careful to avoid a loaded or impacted state of the rectum, as this is the cause of much vaginal congestion. An injection once or twice a day, when necessary, will suffice for this.

In all forms, in addition to the general treatment, when that is necessary, we shall be under the necessity of resorting to local measures. Much benefit will be derived from a sitz-bath twice a day. The bath should be tepid, as a general thing, as being more likely to agree with the largest number of patients. When it is more agreeable, the bath may be coolor. It should be large enough to cover the hips, and the patient should remain in it for an hour at least, and often it is better to use it for a greater length of time. Of more importance are injections. Simple water in large quantities is sometimes sufficient, but more frequently astringent substances will be found essential. The injections should be administered through a perpetual syringe, and the quantity should be large, say from one quart to a gallon of water at each time. The common astringents, as alum, sulphate of zinc, acetate of lead, of the strength of one drachm to the quart of water, will generally suffice. We find cases, however, in which none of these substances can be used, because they disagree with the patient, producing dryness of the parts or increasing the inflammation. In such cases we must carefully search for the right local remedy. We may find it in tannin, tincture of the chloride of iron, astringent decoctions, nitrate of silver in solution, etc. The last, used once in four or five days, with a glass syringe, and the other astringents between, often proves to be the best course.

An excellent and very convenient mode of applying medicinal substances to vaginal surfaces is to make small sacs of gauze or linen, and fill them with the substance intended for use, and introduce them into the vagina. A sac the size of a small glove finger, with a piece of thread attached to it, will hold an abundance of almost any remedy we desire to use. Tannin in powder or ointment, gall ointment, belladonna ointment, and other articles are used in this way. A mixture I have used very commonly consists of two drops of creasote, half drachm of tannin, and one grain of belladonna extract, introduced at bedtime each night. The little bag may be removed in the morning by traction on the string. There are, I think, some advantages in the use of these little bags over the other sorts of medicated pessaries used. I not unfrequently inclose copaiva capsules in these little sacs, and think it an admirable mode of making balsamic applications to the vaginal mucous membrane. Where the astringents or other remedies are thus used they will not replace the injections wholly. Indeed, the vagina should be well washed out before the introduction and at the time of the removal of them. Patients, of course, can manage these applications without aid.

Perseverance and time are important items in the treatment. If we can remove this chronic inflammation in three or even six months, we ought to be satisfied. And we ought not to be surprised to have it return one or more times after it is apparently cured. It is well, also, to teach our patient patience in this respect.

Puerperal Vaginitis.

It might not seem necessary to consider the vaginitis occurring after labor as a separate affection, but there is so much difference—in the causes, nature, symptoms, and termination—between ordinary vaginitis and this form that I think it may be profitable to do so. In some cases of labor, circumstances occur that induce a severe form of inflammation of the vagina. The one most potent is long detention of the fetal head in the pelvis. The pressure thus exercised upon the vaginal walls interrupts the circulation more or less completely; and if continued for a number of hours, violent reaction in the parts results when the pressure is removed. This pressure does not affect the mucous membrane of the vagina so deleteriously as the deeper-seated tissues. The fibro-cellular part of the vaginal walls is the seat of the inflammation. I do not think the use of instruments, however awkwardly, does so much damage as the long-continued pressure. It must not be denied, however, that instruments do give origin to this form of inflammation. When they do so, the inflammation is more circumscribed; it does not extend to all parts of the vagina, as is apt to be the case when pressure by the child's head has been the cause. On account of the nature of the causes, this form of vaginitis runs its course rapidly, and is most sure to end in structural lesions. It is in intense forms of this sort of vaginal inflammation that sloughs and deep ulcerations are met with, which open the bladder and cause vesico-vaginal fistula, recto-vaginal fistula, and cicatrices, which result in contractions and even occlusions of the vagina. It is astonishing how much destruction sometimes is effected by intense post-partum inflammation. I remember being called to a case, in consultation, where the child's head had been pressing down sufficient to bulge the perinæum and labia for sixty hours without any motion. I delivered her with the short forceps in a few moments, without any violence to the parts. The patient was then unavoidably left in the hands of the same careless practitioner that had so outrageously neglected her before the delivery. I saw her three months afterwards, and found the whole septum between the bladder and vagina gone, the urethra terminating abruptly, as though it had been cut straight across, in a great irregular cavity, that was bounded by the pubis before and the uterus behind, and without any defined sides to it. In still a worse case, where shoulder presentation had prevented the passage of the child, the woman was in the second stage of labor six days. The woman arose from her bed with a large undefinable cavity,—without any bladder, apparently, but the very top portion,—and the loss of two inches of rectum, into which the urine and fæces were poured involuntarily. In more than one instance I have seen the whole vagina sealed up, from the fourchette to the urethra, and,—as far as I can judge,—to the os uteri, as the effect of intense and neglected puerperal vaginitis, arising from unaided difficult labor. Every practitioner must meet with cases in which the cavity of the vagina is misshaped, and partially closed, from the cicatrices resulting from it. Now, much of these direful effects may be averted by the rational management of inflammation after it has been initiated.

Symptoms.

When injurious pressure has awakened inflammation in the vagina, the labia and walls become swollen, hot, and very tender. The patient does not generally complain of much severe pain, but there is a sense of soreness and heat. There is almost always fever, chilliness, and other evidences of disturbance of the circulation; the tongue is coated, ordinarily white, sometimes yellow, or even brown, from the beginning. As the disease advances, two or three days from the beginning, the discharge from the vagina becomes more than ordinarily fetid, the labia excoriated, while the heat of the vagina is still very great, and there is much mucus and some pus issuing from it; and later, shreds of decomposed substances, and sometimes considerable sloughs, are mingled with the discharge, increasing the fetor. The pulse is more accelerated, and sometimes becomes quite rapid; the patient is much prostrated; the tongue brown and dry, and the teeth foul with a dark clammy mucus, while the skin is bathed in a copious perspiration. In from two to six or eight days, to these symptoms is added an evacuation of urine through the vagina, at first small quantities, and afterwards more considerable, until, in a short time, the contents of the bladder are passed through this way; the parts around are excoriated by the urine and other acrid discharges, and a slow, uncertain convalescence succeeds, with a permanent vesico-vaginal fistula. Occasionally, though not so frequently, the fæces pass through the vagina a few days after the beginning of the inflammation, and we have a recto-vaginal fistula. If neither of these evils occur, there is extensive ulceration, not so deep, but extending over a large surface of the vagina; thus pus and acrid ichor are poured out in copious quantities, for a long time, gradually decreasing as the surface heals. As these ulcerations heal up, the tissue becomes condensed and contracted, until such strictures or occlusions result as are above mentioned. The practitioner should be wide awake to this frequent course of post-partum vaginitis.

Treatment.

As most damage from this form of vaginitis usually accrues to the bladder and rectum, our first and most solicitous care should be bestowed upon them. The bladder should be frequently emptied with the catheter; at least every few hours the urine must be drawn off. To appreciate this direction, we have but to remember that this organ may be considerably distended in that time, and as the septum between the vagina and bladder is in a state of intense inflammation, it is softened, and therefore is easily ruptured. My impression is that fifty per cent. of the vesico-vaginal fistulæ which now occur might be avoided by following this rule. Its importance cannot be overestimated. In very bad cases the catheter might be used even more frequently, or kept in the urethra. The rectum should be kept free from any accumulation of fæces by frequent injections of tepid water. In addition to this prevention of fistula, the utmost cleanliness must be observed. The vagina should be washed out with soapsuds or other bland detergent fluid, from four to six times a day. For the first four or five days the parts may be kept lubricated thoroughly by the injection, after the water, of very bland sweet oil, or almond oil. When the slough begins to be thrown off, or pus and sanies become copious, an injection of half a pint of tepid water, containing six or eight drops of creasote, twice a day, will serve to cleanse and stimulate the parts better than soap and water alone, which should be used between times. After the lapse of a week or ten days, if the ulceration is not healing, an injection of ten grains of nitrate of silver to the ounce of water may be used quite advantageously. This solution should be injected from a hard rubber or glass syringe, directed to the ulcerated part by the finger. As the case still further advances, a solution of tannin, alum, sulphate of zinc, or other astringents, with the detergents, may be used. As the parts begin to contract by the advanced healing of the ulceration, the closure, partial or entire, should be anticipated by the introduction, daily or oftener, of wax, rubber, or other sort of bougies. It is well, when this last expedient is necessary, to smear them with ointment that may exert a healing influence on the ulceration. The physician cannot be too attentive to these cases. He should see to it personally that his directions are carried out, and feel himself responsible for any serious permanent injury that can result from want of diligence. Women or their nurses cannot understand, and it is feared that physicians do not properly appreciate, these means of averting the awful accidents which result from sloughing and ulceration in these cases.

Urinary Fistula.

Although generally resulting from puerperal vaginitis, fistula is sometimes produced by other causes. Extensive ulcerations from pessaries sometimes penetrate the septum between the vagina and bladder. Stone or other foreign bodies in the bladder may act as causes of ulcerative processes of sufficient gravity to do the same. Malignant diseases, as cancer of the uterus, vagina, or bladder, not unfrequently lay open these cavities; and, in some rare instances, perforations by the unskilful use of instruments have been observed.

Urinary fistula may be: first, urethro-vaginal; second, vesico-vaginal; third, vesico-uterine; and, fourth, vesico-utero vaginal. In the first variety the opening is through the urethra; in the second through the septum between the vagina and bladder; in the third the vesical wall of the cervix uteri is perforated; in the fourth, two cases of which I have seen, the anterior and posterior portions of the cervix are both laid open. The cervix is sometimes involved with the vaginal septum, being torn up from the extremity through the anterior lip into the vaginal cavity. The whole urethra sometimes sloughs off, leaving the pubic arch unoccupied by that canal. In one case I have recently seen, the urethra and neck of the bladder were lost, leaving the remainder of the vesico-vaginal septum healthy and entire. In certain other instances the whole lower portion of the bladder is wanting, and the uterus more or less mutilated. To make the condition more deplorable, in some rare examples of the terrible destruction of the parts, the rectum is involved in the common

FIG. 10.

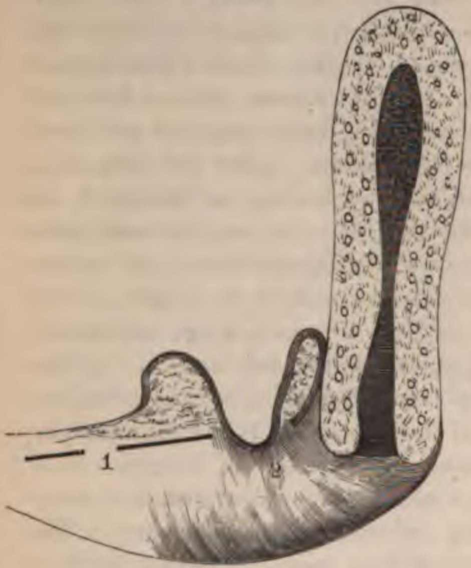
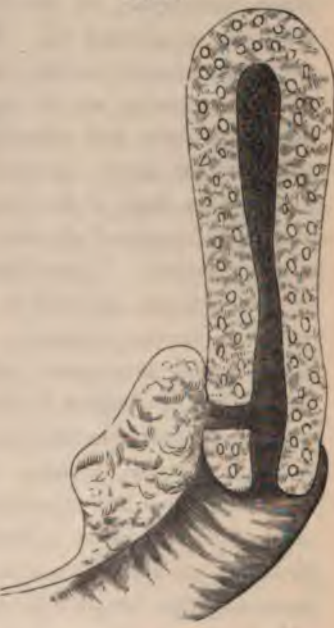


FIG. 11.



ruin. The size of the opening in the urethra or vesico-vaginal septum is sometimes so small as scarcely to be perceptible, and from this it may vary through all grades of dimension to the irreparable loss of tissue above described. The direction may be lengthwise, diagonal, tortuous, or crosswise.

The fistula, when established, is usually associated with other effects of the disease from which it is produced. Cicatrices and contractions of the vaginal walls are very common accompaniments. These, when extensive, embarrass examinations and operations very much. They also change the size, shape, and direction of the vaginal cavity.

Diagnosis.

The constant flow of urine through the vagina, instead of the urethra, is a sufficient symptom to decide the existence of fistula; but we meet with cases where the flow of urine is not constant, the patient being able to retain for some time and then discharge her urine naturally. This circumstance is due to the plugging of a small opening by mucus, or the prolapse of some part of the bladder into the fistula. In all instances it is proper and necessary to make a clear diagnosis of the existence, size, shape, position, and complications of the fistula. This is usually easily done by the fingers and probe. The patient should lie on her back with her hips near the edge of the bed, and her legs flexed so that we may have free use of both hands. The fingers will readily pass through a large fistula into the bladder, and, by moderate care, be made to thoroughly survey it and the surrounding parts. But the fistula may be so small or situated so as to entirely escape detection by the finger. We shall be aided in such cases by introducing a probe, slightly bent, through the urethra with one hand, while the fingers of the other are in the vagina. The bent extremity of the probe is turned toward the septum, pressed gently upon and passed over every part of it until it is made to pass through the opening, when it may be recognized by the finger in the vagina. When the perforation is very small, or vesico-uterine, this kind of examination will fail to find it. In such cases the vagina should be dilated as for operation, and exposed in a good light so that every portion may be seen. When thus exposed, the cavity should be sponged out and all the urine thus removed. After this perforation, usually we have but to watch a few moments when we shall perceive the fluid making its appearance through a minute pore, which, perhaps, is hidden in an ulcer in some remote part, or we may observe it coming through the os uteri. If, however, no urine makes through in such quantity as to indicate the place of injury, we may inject the bladder with tepid water in such amount as to distend the organ somewhat. Soon the obstacle is overcome and the water will escape copiously into the vagina. If it comes through the mouth of the uterus, the fistula is situated in the cervical cavity. This may be made more conclusive by plugging the os with cotton and again injecting the bladder. The fluid will not escape, of course, until the cotton is removed, when it will pass in such abundance as to leave no doubt of its place of exit. German physicians, Veit especially, recommend the use of water colored so as to make its flow through the opening more obvious.

Prognosis.

Having found the fistula, ascertained its size, position, shape, direction, etc., we ought to survey the vagina, to find strictures or other deformity, and ascertain the distensibility of this tube. We do this in part to determine the prognosis of the case. Can the fistula be cured? is a pertinent and important question, which will be decided by this kind of examination. Fortunately, *now*, thanks to Dr. Sims, almost anything short of loss of the whole septum may be cured. If the fistula consists of a defined opening, it matters little how large, we are justified in expecting success. If, as is sometimes the case, there are no sides, edges, or ends to it, but the vagina and bladder are one cavity, smooth, and continuous, we cannot reasonably undertake an operation unless it be to close the vulva, as has been suggested and practiced. Some circumstances, independent of the character and size of the fistula, are necessary to insure success. The vagina should be healthy. If the walls of this cavity are in a state of inflammation or congestion, the prospects of a cure are more remote. Great nervous susceptibility is sometimes difficult to overcome, and should be a reason to defer the operation. The general health of the patient is also a matter of the first importance. A highly nervous condition of the system, with an abundance of lithates in the urine, is a condition in which there are many chances of failure.

Treatment

Naturally divides itself into palliative and curative.

The palliative treatment is of great importance, and he would be a benefactor who should devise means of preventing the great suffering which results from these inevitable circumstances. The greatest amount of pain and suffering in such cases is caused by the flow of urine over the cutaneous surface. The salts held in solution by the urine, and the compounds resulting from their chemical decomposition inflame and excoriate the skin of the thighs, perinæum, and external genital organs. Relief can be perfect only by preventing the contact of the urine with the skin. I think there would be no difficulty in making an instrument that would collect the urine, in most cases, before being discharged from the vagina. But the difficulty consists in getting one that would be tolerated in the parts. What we want is a sac that may be introduced and retained in the vagina with an opening in the upper wall opposite the fistula, large enough to permit the urine to flow in it. The sac should have a tube leading out of the vaginal orifice in order to convey the urine into a reservoir outside, which should be attached to the person of the patient. The sac should be of india-rubber or other impervious material, and so soft and smooth as not to irritate the mucous membrane of the vagina, and so small as not to distend the vagina painfully. But the urine would not flow into and through this tube unless the sac was distended so that the opening would be applied to the fistula. The distension may be effected after the sac is introduced, by passing cotton up through the tube until sufficiently distended. In order to make the urine drain through the tube something like cancellariæ should extend from the cotton in the sac outside through the tube. The drainage will be started by wetting the contained material. The capillary attraction of the cotton will absorb the urine until it becomes saturated, while the loose cord will carry it off like a siphon through the tube. If an instrument of this kind can be made that will be tolerated by the vagina, I think it will act well.

In the absence of anything to prevent the urine from flowing on the person, the patient must depend upon frequent ablution with warm water externally, and upon warm injections in the vagina. After washing externally, the skin should be kept covered with simple ointment. The injections should be made four or five times in the twenty-four hours, and the external ablutions as often as the napkins become sufficiently saturated to replace by others.

Another item in the palliative management of the first importance is one mentioned by Dr. Emmet, viz., never to use a napkin twice without washing. Sometimes to avoid labor patients will simply dry the napkins and then use them again, thus using a napkin several times without washing. In this way the salts of the urine are applied to the skin in double strength, and the mischief greatly increased.

The *curative treatment* consists in the closure of the fistula.

It is hardly necessary to mention any other method than the closure of the fistula by suture in some form or other. Cauterization was often resorted to before the present safe and sure plans of operation by Drs. Sims and Bozeman, but is now scarcely thought of.

To Dr. Marion Sims we are indebted for the cure of vesico-vaginal fistula; for although others had succeeded in making cures by the use of nearly the same means, his ingenuity and persevering industry gave such positiveness and intelligent definiteness to the different steps to be followed in order to succeed, as to convert the operation from one of great uncertainty, confined to experts and experienced operators, to an easy, almost invariably successful one, which any surgeon of ordinary skill may venture upon without fear of failure. The profession is also indebted to Dr. Emmet, for a very lucid demonstration of the principles upon which the operation is founded, in his work on that subject.

In describing the very simple operation of Dr. Sims one can scarcely do otherwise than follow, if not copy, the graphic description given by Dr. Emmet. Very much depends upon proper preparation of the system of the patient and the parts concerned, in order to insure successful adhesion of the two edges of the fistula. The patient should be in the best possible general health. I think there is great propriety in the distinction insisted upon by some surgeons between the plastic and aplastic diathesis in patients subjected to surgical operations, and am anxious that my patients, for some weeks before the operation, be subjected to the best hygienic condition for their general health. In the country, if possible, plenty of exercise in the open air, good nutritious diet, a contented and happy state of mind are all that are required to effect the desired preparatory condition. In patients whose blood is impoverished from nursing, hæmorrhages or other debilitating circumstances, the ferruginous and bitter tonics should be administered. If the general health is well established and maintained for a little time, the vagina will scarcely be otherwise than firm and sound in texture, and free from the troublesome urinary concretions that sometimes adhere to the mucous membrane of the vagina, the vulva, and even the greater labia. During the preparatory constitutional treatment, where that is necessary, the local preparation may be attended to—by frequent cleansing by copious injections of warm water, stimulating the parts in the vagina that are red or excoriated with a weak solution of nitrate of silver every four or five days. The solution may be of the strength of ʒi to f℥iv of distilled water. Dr. Emmet says that:

"It is frequently necessary to pursue the same general course for many weeks before the parts can be brought into a perfectly healthy condition. This point is not reached until not only the vaginal wall, but also the hypertrophied and indurated edges of the fistula have attained a natural color and density. This is the secret of success, but the necessity is rarely appreciated; without which the most skilfully performed operation is almost certain to fail."

The only other preparatory step will be the administration of a cathartic to evacuate the bowels. The catharsis ought to be entirely over at least twelve hours before the operation. With these preliminaries accomplished, we should have a large window on the sunny side of the house, a sun-shining day, four assistants, a table of convenient height, five feet long and two wide, and the necessary instru-

FIG. 12.

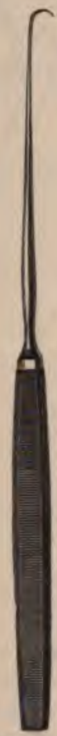


FIG. 13.

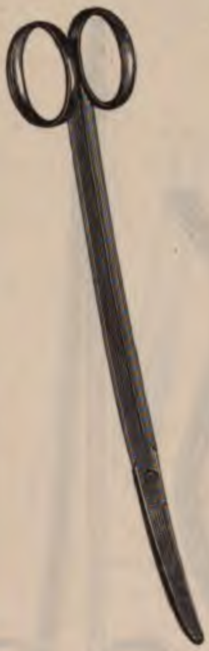


FIG. 14.

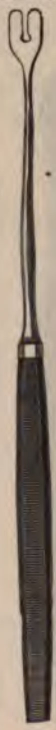


FIG. 12.—Tenaculum, with which to hold the edge of Fistula while being pared.
FIG. 13.—Curved Scissors, for paring edge of Fistula.
FIG. 14.—Wire Adjuster.

ments. The table, covered with one or two quilts, is to be placed with the end toward the window, from four to six feet distant. The

Fig. 15.

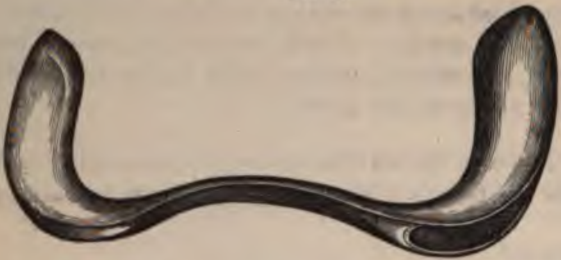


Fig. 16.

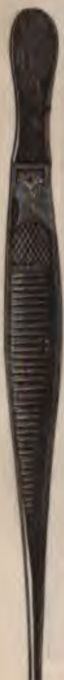


Fig. 17.

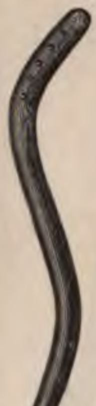


Fig. 18.

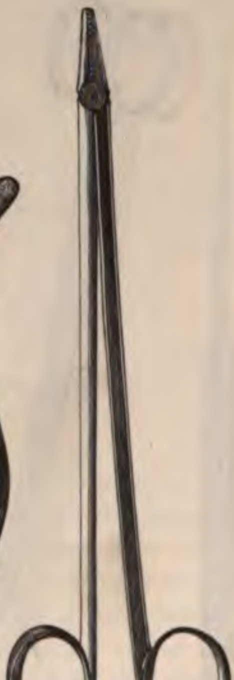


Fig. 19.

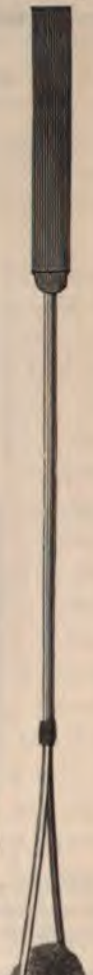
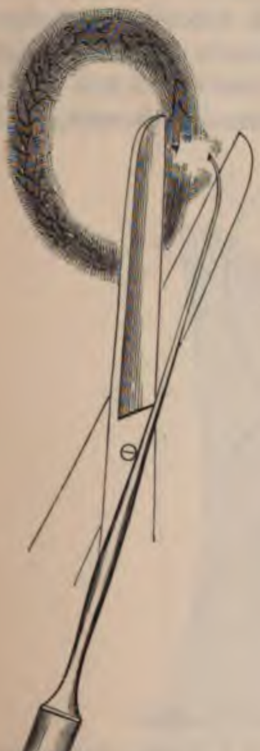


Fig. 15.—Speculum for dilating Vagina.
Fig. 16.—Forceps for twisting the Wires.
Fig. 17.—The Catheter.
Fig. 18.—Needle Forceps.
Fig. 19.—Sponge-holder. The instruments are represented half size.

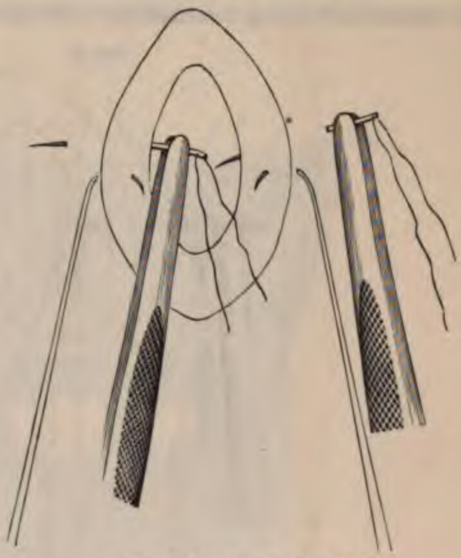
patient lies on her left side, the limbs drawn up, the right rather most, with the left arm behind her, so that she rests full on the front of the chest. One of the four assistants uses the anæsthetic, another the speculum, a third the sponges, and the fourth attends to the instruments. On a tray, within easy reach of the operator, the instruments should be placed. They are the speculum, two tenacula, scissors, Emmet knife, two long sponge-holders, forceps for carrying the needles, one wire adjuster, a blunt hook, forceps to twist the wire, half a dozen needles, slightly curved, about one inch long, armed with silk ligature, doubled so that the silver wire may be placed in the loop and thus drawn through the wound, an elastic male catheter, or one of Sims's S-shaped instruments, with an india-rubber tube, a little larger than the catheter, to carry the urine clear of the bed. The surgeon takes his seat at the end of the table next the window, near the breech of the patient, introduces the speculum, dilates the vagina, and thus brings the parts thoroughly in view, and then gives the instrument to the assistant to keep in that position. If the position of the patient prevents the parts from being thoroughly exposed and lighted, it should be changed until this difficulty is obviated,

FIG. 20.



Method of paring the edges.

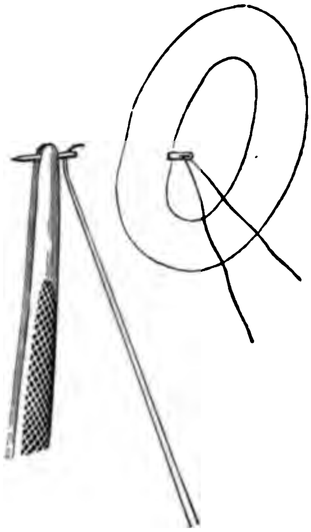
FIG. 21.



Method of passing the Needle.

when the operator may proceed as follows: With the tenaculum in the left hand, the edge of the fistula is transfixed and held up to view, and, with the scissors, bevelled from the mucous membrane of the bladder outward. Dr. Emmet says the point of the tenaculum should be introduced toward the fistula, as shown in the figure. As much should be removed in this way, without changing the place of the tenaculum, as practicable. Another place on the edge of the fistula is then seized and trimmed in the same manner, and so on, until the whole circle is denuded completely of the cicatricial tissue. We may sometimes succeed after a little practice in removing a complete ring of the edge of the fistula. This will of course insure to us a more perfect operation than if the parts are removed in pieces. As this part of the operation is being accomplished, the assistance of the sponge will be called into use on account of the bleeding. I do not see the necessity of removing as much substance from the edge of the fistula as is directed by some authors.

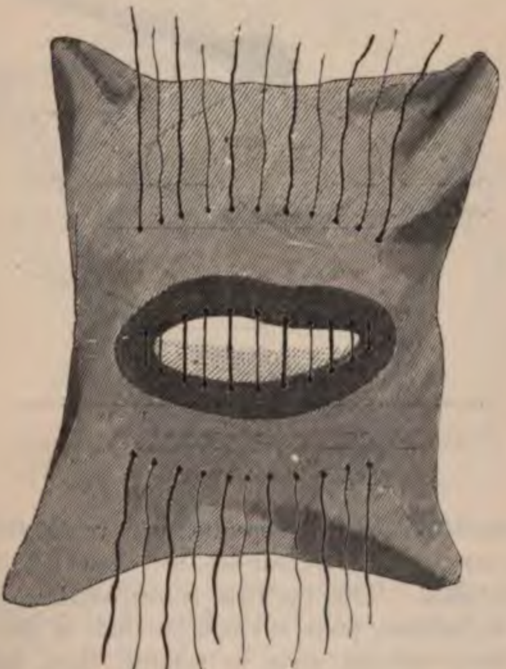
FIG. 22.



Method of using the Tenaculum in giving aid to the Needle.

The main object, I think, is to have the edges evenly and thoroughly denuded of the mucous membrane. This much should be done with a completeness that admits of no doubt, and if we have a good light, there need be no doubt, as we can see and examine the part sufficiently well to be positive. After the bleeding has ceased, we may insert the sutures. We commence at the angle of the wound most remote and difficult to reach. The needle is to be introduced first into the lip of the wound nearest to the operator, by starting it in about half an inch from the freshened edge, dipping it down, so as to make the point come out in the denuded portion, just at the junction of it and the vesical mucous membrane. The needle being brought through at this point, is again inserted in the opposite edge, corresponding as near as possible with that part whence it emerged, and carried forward far enough to emerge half an inch beyond the edge of the wound, and drawn through; the wire is then hooked in the double end of the silk and drawn through the wound, and detached from the silk and given to the assistant in charge of the speculum to retain in its place. The next suture is to correspond with and be placed within two lines of the first. They are thus placed in sufficient numbers to close the opening completely (see Fig. 23). Having all the sutures introduced, the one nearest the operator must be isolated and twisted by the forceps made for that purpose, until the angle of the wound is evenly coaptated. The next is to be managed in the same way, and so of the remainder in order. Great care must be taken to see, as the closure is effected, that the lips of the wound are drawn evenly and smoothly together (see Fig. 24).

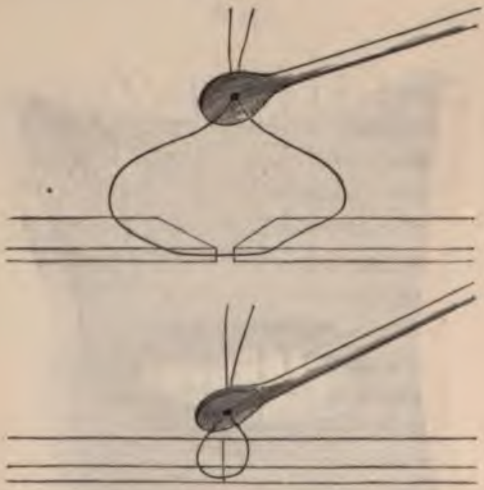
FIG. 23.



The Fistula with edge pared and the Sutures placed.

If we are not particular, the edge of one side or the other rolls slightly in, and unfreshened mucous membrane is brought up to the denuded surface. This, I think, is a circumstance that is very liable to occur in the hands of an inexperienced operator. Both the insertion of the sutures and bringing together the edges may be facilitated by the skilful use of the tenaculum and the adjuster. The tenaculum will enable us to disengage and straighten the edges, in adjusting them, and in inserting the needles keep them firm. The adjuster will place the twist of the wire in any position with reference to the junction of the wound we may desire. In twisting the wire there are two things to be avoided,—one is tightening it too much, and the other leaving it too lax. Experience will fix these items after a few operations, but I think that the operator may venture to tighten the twist of the wire until it fixes but does not strangulate the part included in the stitch. After the twist is completed, we ought to be able to pass an ordinary probe through the circle of the stitch without much force, and yet, upon its removal, there should be no apparent space. If the stitch is drawn too tightly, the parts will be strangulated and early cut through by ulceration; if too loose, the urine will pass through as the bladder becomes filled and prevent adhesion.

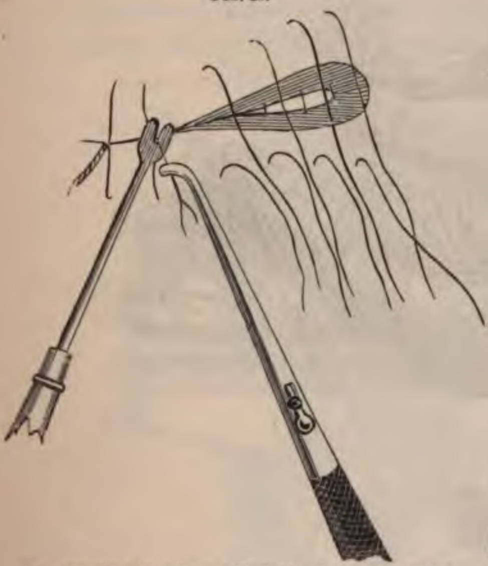
FIG. 24.



Wire Adjuster.

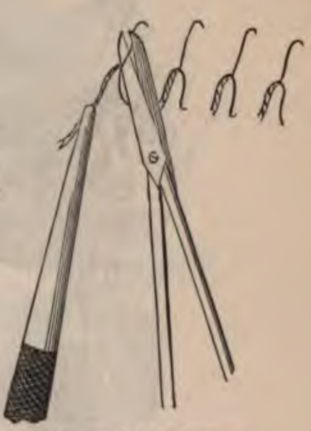
As each wire is adjusted and twisted it should be bent over the tenaculum, so as to lie flat upon the surface of the mucous membrane of the vagina. The operation finished, the catheter may be inserted, the patient placed carefully in bed, on either side, and a grain of opium administered. The catheter will sometimes become foul with deposits, and require cleaning every twelve or eighteen hours, but as a rule, while the urine is running freely, it may remain in place. Great watchfulness will alone prevent this instrument from being misplaced. The great desiderata of the after-treatment, are to prevent an accumulation of urine in the bladder, and the bowels from being evacuated. The former can be certainly accomplished in no other way than by having a competent assistant by the patient, or very near her all the time, who, when the catheter does not deliver the water freely, will remove it and replace a clean one, however frequently that may be required. Dr. Emmet directs that the patient be placed upon her back and so remain during the after-treatment. He causes a double inclined plane to be made by the bedding, so that the legs may be bent and the head and shoulders elevated. We may keep the bowels quiet by administering a grain of opium twice or three times a day. If the patient is very restless, we ought to give as much more as is necessary to quiet this. The only other important item of treatment as a general thing is cleanliness, and for this purpose vaginal injections of tepid water, with fine toilet soap, twice

FIG. 25.



Closing the Wounds and Twisting the Wire Sutures.

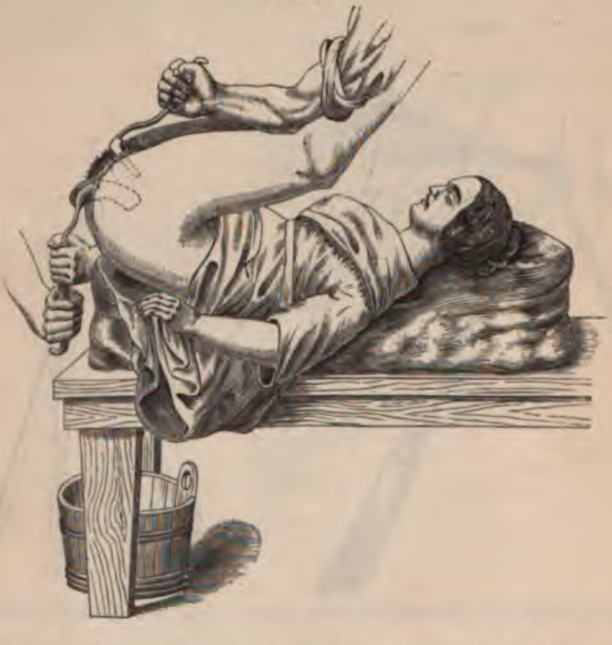
FIG. 26.



Removing the Sutures.

or three times a day, will suffice. The vagina will thus be kept clean with much certainty. The diet should not be too sparing. The ordinary diet of the patient, in half or two-thirds of the quantity, I am convinced is better than any considerable change in quality. The patient must remain quiet as practicable for nine or ten days. There will be no good in leaving the sutures in place longer than ten days, perhaps, but there can no harm result from their presence longer. The removal of them is easily accomplished, by passing one blade of the scissors within the circle of the stitch, and dividing it, when the wire may be withdrawn by the forceps. The patient should keep her position and wear the catheter for five or six days, after the sutures are removed, to allow the consolidation of the cicatrices and the closure, by contraction, of any minute opening that may have been left.

FIG. 27.



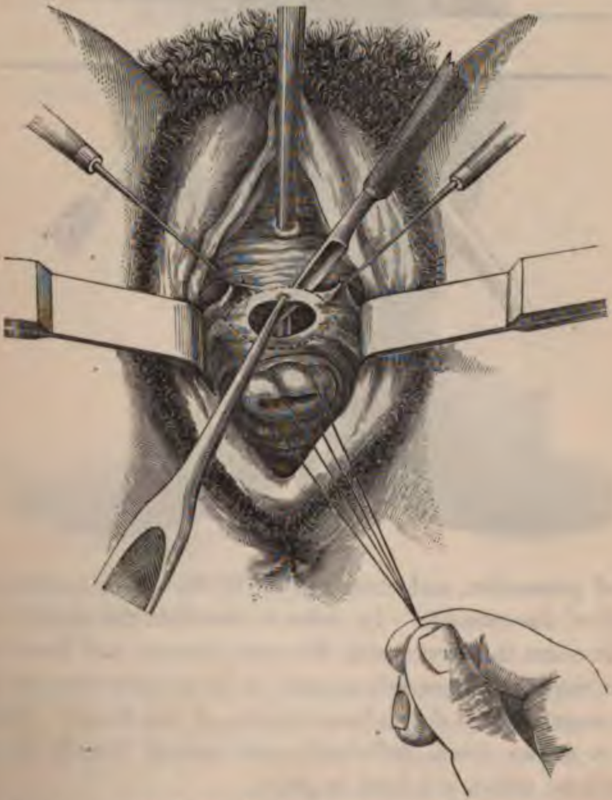
Although the experience of Drs. Sims and Emmet has proven the propriety and efficacy of this kind of after-treatment for vesico-vaginal fistula, all of it is not absolutely necessary to success. In two instances operated on by the author, the patients were not confined to any position, and were permitted to rise from the bed and sit up part of the time each day, from the time of the operation until the sutures were removed. The catheter was not worn in either case, but it was used for the first four days, every two hours, to evacuate the bladder. At the end of four days, the patients were permitted and instructed to evacuate the bladder as often as once in two hours voluntarily.

Both the patients were cured, and the comfort they enjoyed contrasted very favorably with that of such as were confined to the position on the side or back, and were obliged to wear the catheter for ten or fifteen days. I have, from time to time, seen suggestions in medical journals, which I cannot now command, that led me to conduct the after-treatment in these two cases as above stated.

Simon's Method.

In Continental Europe the late Professor Gustav Simon, at the time greatly distinguished himself in plastic operations. His operation for vesico-vaginal fistula is, in many respects, different from that above detailed.

FIG. 28.



He places his patient on her back with the breech very much elevated. In cases where the fistula is near the orifice of the vagina, the limbs are placed in the position usual in lithotomy. If the fistula is deep, however, the limbs are brought up and extended over the sides of the abdomen and breast, as shown in Fig. 27. If the uterus is sufficiently mobile, Simon draws it down to the external organs of generation, and thus places the fistula immediately under the hand of the operator. In order to ascertain the mobility of the organ, he seizes the cervix with Museux's forceps, and draws upon it until the vagina is inverted, or until it is evident that the forcible traction required will do violence to some of the tissues. When the cervix is drawn down sufficiently, two strong threads are passed through it by which it is held in place.

FIG. 29.

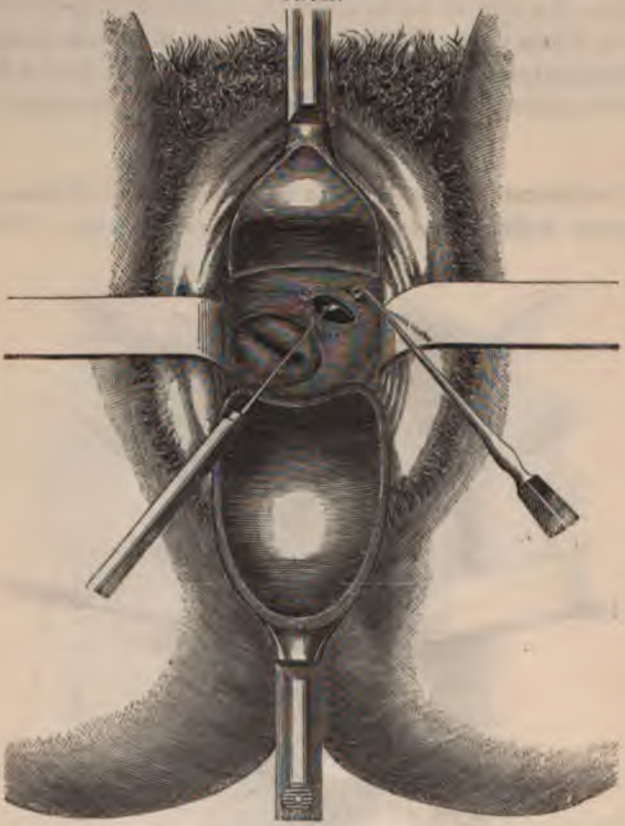
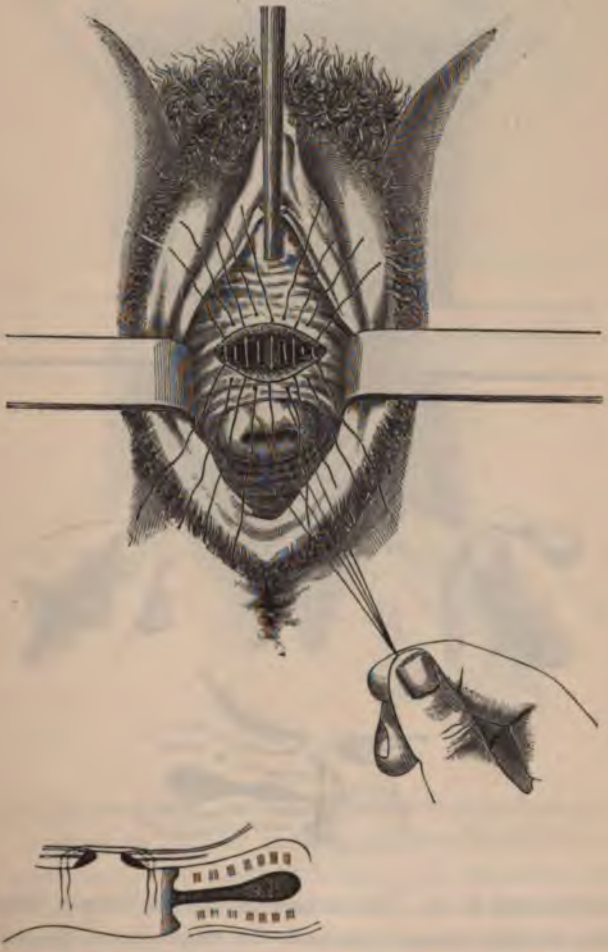


Fig. 28 represents this stage of procedure; the sides of the vulva being held out of the way by levers made for the purpose.

When the uterus cannot be thus drawn down, Simon uses two specula, and the levers in the sides of the vulva, if necessary. This method of exposure is very plainly illustrated by Fig. 29. One large speculum draws back the perinæum, and another, somewhat differently constructed, is placed under the symphysis pubis.

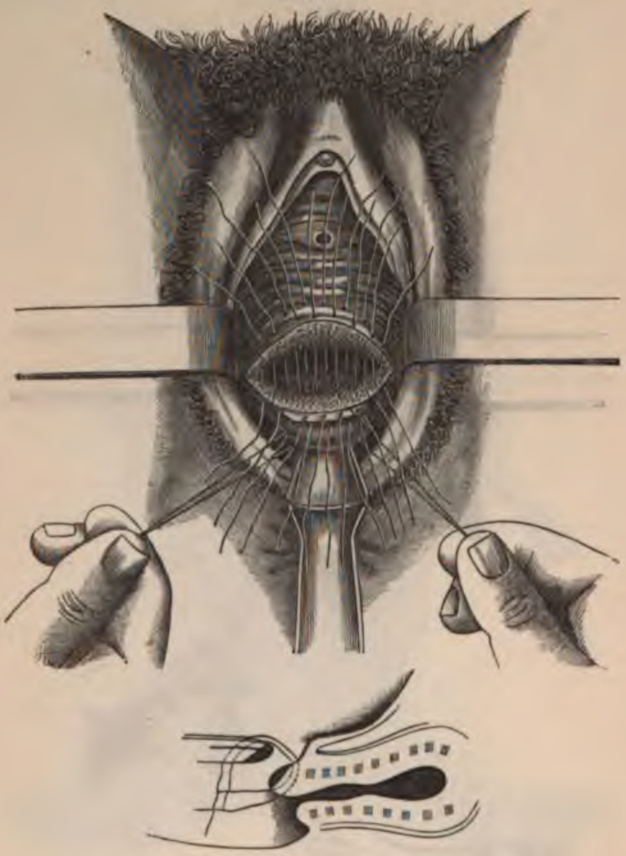
FIG. 30.



The margin of the fistula is prepared by cutting away all the cicatricial tissue, and the paring is done almost perpendicular to the surface of the vaginal mucous membrane. There is some slight inclination or declivity in the cut edges, but they are very much less bevelled than in Dr. Sims's operation. Fig. 30 will give a correct idea of this part of the operation. A comparison with Fig. 30 will give the reader an idea of the liberality with which Dr. Simon considers it necessary to pare away the tissue.

The wound is closed with fine white silk, about the size of a large horsehair. Each stitch is placed a little more than a line distant from the one next to it. The needle is carried entirely through the lips of the wound, so as to penetrate the vaginal and vesical mucous membrane. In large fistulæ, every alternate stitch is placed further from the edge of the wound. Fig. 31 also shows this method of introducing the stitches. The threads are carefully tied in a knot and the operation is completed. The closed fistula is well represented by Fig. 32.

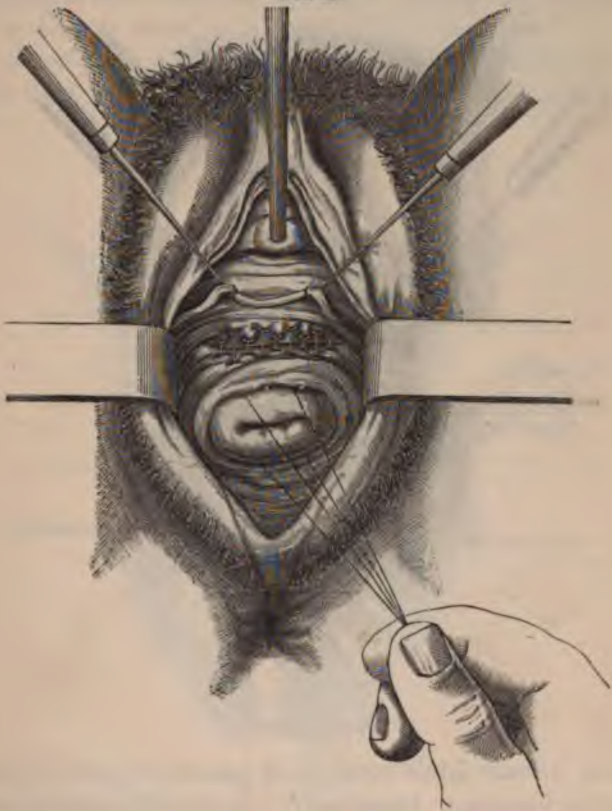
FIG. 31.



Vesico-uterine fistulæ are operated upon in the same manner.

Figs. 33 and 34 show how such fistulæ are pared, the stitches introduced, and the wound closed.

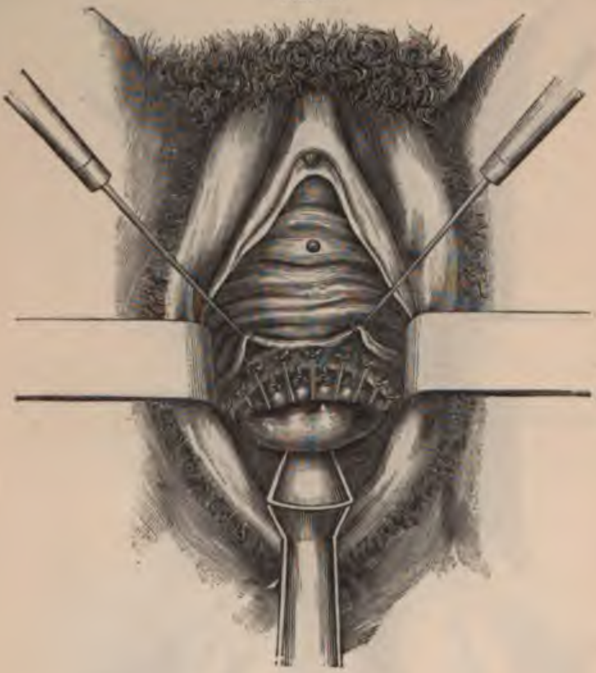
FIG. 32.



In the *after-treatment*, Dr. Simon thinks it superfluous, if not injurious, to leave the catheter in the bladder. He directs us to draw off the urine once in two or three hours, until the patient can voluntarily discharge it, which she can usually do in the second or third day. He allows the patient to lie in any position, and on the eighth or ninth day she can rise from the bed. All straining at stool, before the eighth or ninth day, should be avoided, if necessary, by the administration of opium. On the fourth or fifth day the physician should examine the wound with a view to the removal of the stitches, and if they are cutting their way through the tissues they should be cut and drawn out.

Of 43 fistulæ in 40 women operated upon by Professor Simon, 35 were perfectly cured, 2 of the women died, 5 more of the fistulæ were nearly cured, and 1 was not benefited.

FIG. 33.



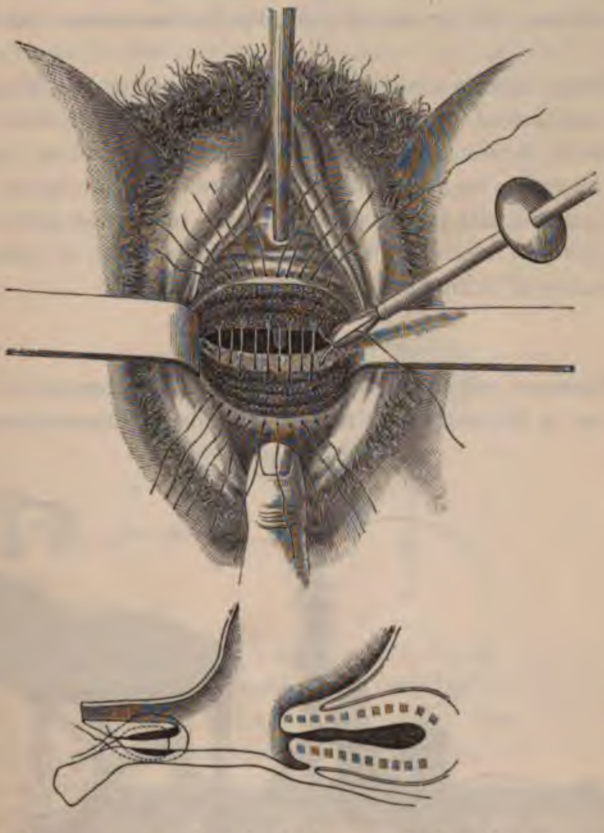
Kolpokleisis.

Cases of urinary fistula occur which cannot be cured by an operation like the foregoing. Occasionally we meet with instances in which the damage is more serious, where the septum between the bladder and vagina is nearly or completely destroyed, not enough of this structure being left to enable us to restore it.

Surgery has successfully met these cases by closing the vaginal orifice or lower part of the vaginal canal, thus making a common receptacle of the posterior and lateral walls of the vagina, and the remaining portion of the bladder, into which the renal secretions and the uterine discharges are received and from which they find their way out through the urethral canal. The vagina may be closed by uniting the inner edges of the labia or the anterior and posterior walls of the vagina quite inside the orifice. The operation for uniting the labia will be necessitated in some instances. We occasionally meet with cases where the anterior wall of the vagina is entirely removed from the pubis, and nothing is left behind that bone to which the posterior wall of the vagina may be united. So completely is this removal of tissue that the posterior face of the pubis is covered with nothing but a thin cicatricial substance. The labial closure of the vagina is the only resort in this class of extreme cases.

The *operation* consists in removing a ring of mucous membrane from the inner margin of the labia, just behind the orifice of the urethra, three-quarters of an inch deep, and then by means of deep silver sutures making perfect apposition of the denuded surface. The sutures should be passed deep enough to include the whole of the raw portion of the parts, and extend on the outside three-quarters of an inch in the substance of the labia beyond their margin. The sutures, to insure union, should be not more than three lines

FIG. 34.



apart. The parts should be carefully adjusted while the wires are being twisted, so as to make an even adaptation.

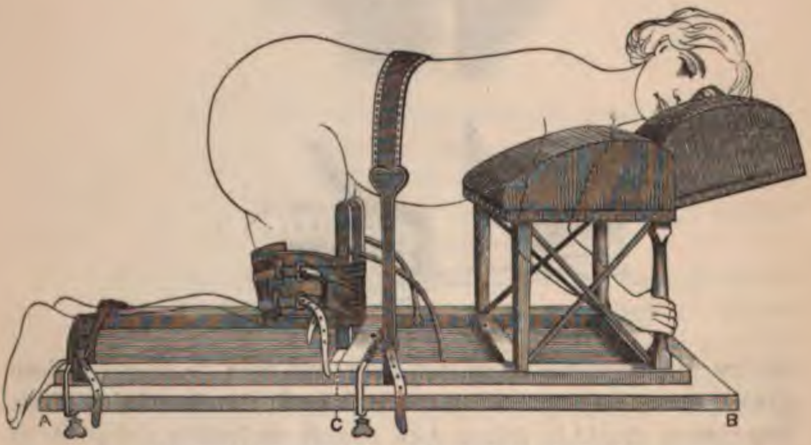
When there is sufficient of the vesico-vaginal septum behind the pubis to permit its coaptation to the posterior wall, the operation performed and proposed about the same time by Simon and Bozeman is preferable to the foregoing. Simon's method is simple and effectual in closing the vagina thoroughly. He denominates the operation Kolpokleisis. The vagina is held open by the instruments and by the method described for operating on fistulæ, and a ring of mucous membrane is removed as represented in Fig. 34, and then united by the sutures. Silver wire is probably the best suture for this operation.

Dr. Simon operates as high up in the vagina as the disease will permit, and instead of confining the operation to the urethral portion of the cavity, he sometimes operates so near the os uteri as to preserve almost the entire length of the anterior wall of the vagina. After either operation the treatment will consist in perfect quietude, the use of opium to relieve pain, and the fixed catheter to prevent an accumulation of urine until the parts are healed.

Bozeman's Method.

Dr. Bozeman, whose operations have attracted attention in Europe as well as in this country, claims to have made improvements upon the operation for vesico-vaginal fistula as well as in the means and methods of performing it. As now employed his operation has for

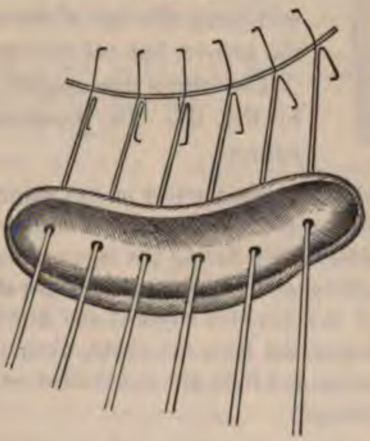
FIG. 35.



Bozeman's Apparatus for Retaining the Patient in Position.

its distinctive characters the button suture, the position of the patient, and a self-retaining speculum. The figure which is here introduced will serve to illustrate the position of the patient and the self-retaining speculum. In paring the edges of the fistula Dr. Bozeman makes the extent of denuded surface rather greater than is recommended in the foregoing pages, and does not place his sutures as near together. After having prepared the parts for coaptation he passes the two ends of each suture respectively through the opening in his adjuster, as represented in figures taken from page 24 of *M. Andrade essai sur le traitement de fistules vesico-vaginales par le procédé Americain modeaé par M. Bozeman.* Thus adjusted the wound is ready for the button, which should be made at the time and in accordance with the shape and size of the wound. The button is cut out of a thin sheet of lead, about one line in thickness, long enough to project about one-fourth of an inch beyond the sutures at either end of the wound, and a very little more than half an inch wide. If the wound is straight after it is closed with the suture, the button should be the same; but if the wound is curved the button should be made to suit the curvatures. Then with the "button-forming forceps," the groove along the centre may be formed by clamping across the sides from one end to the other. Thus formed the button is slightly concave on the side that goes next the closed wound, and has a groove of almost a line in depth along the centre, from one end to the other, and is ready to be perforated for the sutures, which, after measuring off the distances

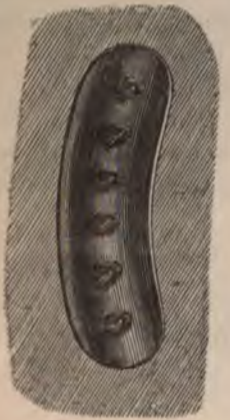
FIG. 36.



accurately, is done by an instrument for the purpose. The operator should then assure himself that all the spiculæ caused by the perforating process are removed, and proceed to adjust the button.

Fig. 36 shows the sutures through the button as it approximates its future site on the wound. The button is pressed down evenly upon the wound by means of the blunt hook, and each suture, one after the other, passed through perforated shot, and fixed by clamping the shot with strong forceps for the purpose. Each suture should be carefully fixed in this way separately.

FIG. 37.



In adjusting the sutures the wire should be tightened by being drawn through the opening at the time the shot is compressed. Only so much traction should be made as will bring the lips of the wound well up into the groove, but not strangulate them.

The button thus applied is well represented by Fig. 37. Dr. Bozeman claims for this suture:

> "1. Separate and independent action of the sutures.
>
> "2. Perfect coaptation of the edges of the fistula, and power to hold them in a certain relationship during the reparative process.
>
> "3. Perfect steadiness and support of the edges of the fistula.
>
> "4. Protection of the denuded edges of the fistula from the vaginal and uterine discharges, and from the urine, when there happens to be more than one opening, and it is not convenient or desirable to close both at the same sitting."

We are indebted to Dr. Bozeman for a very ingenious and effectual method of diagnosing minute and otherwise indistinguishable fistulæ. He calls it the linen test, and describes it as follows:

> "Pus and mucus in small quantities adhere *to* and spread *upon* the surface of a piece of linen without being absorbed by it, while water or urine, on the contrary, even in the minutest quantity, when brought into contact with the same material, penetrates almost instantly the entire thickness of the fabric. The presence of these fluids, if the flow is continuous, is evidenced by increasing saturation of the spot acted upon, and the spreading of the moisture in every direction. Thus is presented a most valuable and reliable means of determining the presence of urine in the vaginal or uterine canal when the quantity is so small as to escape observation; not only this, but the precise situation of its

escape from the bladder can be made with the greatest certainty when it would be impossible to detect it by the ordinary means, owing to the minuteness of the orifice or its concealment by a fold of mucous membrane.

"In using the test nothing more is necessary than to fill the bladder with water, and then wipe thoroughly dry the anterior wall of the vagina. A piece of old linen is now rapidly spread out upon the latter, and pressed down smoothly, the patient being in the angular position, upon the knees. In a few moments the effect of the fluid upon the linen will be seen at the place of escape from the bladder, should the orifice be even no larger than a pin's point or a fine bristle. When the patient is placed in the dorsal position it is seldom necessary to inject the bladder; the natural flow of the urine from the kidneys will be found quite sufficient to mark the situation of its unnatural escape into the vagina."

With regard to the success of his method of operation, as now practiced by him, he gives the following data:

"For the period from 1867 to 1870, 17 cases, having 23 fistulæ, got 24 operations, with the following results:

"21 fistulæ completely closed.

"1 fistula completely closed in a syphilitic subject and afterwards reproduced.

"1 death, caused by intense heat of the weather and consequent exhaustion of the patient.

"88 per cent. of permanent cures.

"87½ per cent. successful operations.

"The syphilitic case was cured as regards the result of the operation, and the death did not result from causes connected with the operation. It will be seen, therefore, that the percentage of permanent cures and of successful operations is not far below the maximum limit. Of these 23 fistulæ 3 were vesico-uterine, 1 vesico-utero-vaginal, 1 utero-vaginal, 1 laceration of the urethra, 1 urethro-vaginal and recto-vaginal, the latter admitting easily three fingers into the bowel; all of which were completely closed, with preservation of the functions of all the organs involved."

In a recent letter he says, with reference to his operations:

"By examination of my reported cases, treated by this form of suture, you will find the inauguration of several new procedures in the following affections:

"1st. Urethral lacerations extending from the meatus backwards, a part or the whole length of the canal. By a peculiar modification of my button, the catheter in these cases is supported and the closure of the rent made complete to the meatus. (See *North. Am. Med.-Chir. Review*, July and November, 1857.)

"2d. Vesico-uterine fistulæ. A mode of treatment to close the fistula and preserve the functions of all the organs intact. The operation consists in dividing posteriorly the anterior lip of the cervix uteri down to the sinus, then paring the sides of the latter and closing the wound. (See Case V, op. cit.) This was my first case, and here I got the idea. I have since performed successfully this operation in three other cases. In one case the sinus opened so high up in the cervical canal that the utero-vesical fold of peritoneum was implicated in the operation.

"The great value of this procedure cannot be overestimated. The procedure of Jobert, which consists in paring the two lips of the cervix and uniting them by suture, is almost universally adopted by surgeons in this class of cases. If the operation proves successful, the menstrual fluid is left with no other outlet than through the small sinus (usually no larger than the most delicate probe) into the bladder, there commingling with the urine and finally escaping with it through the urethra. In the journals I have seen the operation is claimed as a great triumph. The operation is frequently performed by leading surgeons.

"With regard to this practice I unhesitatingly condemn it. It is unsurgical and unjustifiable, and should never be performed.

"3d. Vesico-utero-vaginal fistula. An original procedure for its cure. (See Case VIII, op. cit., 1857.)

"4th. Incarceration of the cervix uteri in the bladder. An original procedure for the disengagement of the cervix from its confined position and the closure of the fistula, with preservation of all the functions. (See Case XV, op. cit., and Cases XXVIII and XXXVIII, *New Orleans Med. and Surg. Jour.*, January, March, and May, 1860.)

"I would add here that my cases are the only ones to be found upon record, and I venture the assertion, without the fear of contradiction, that no cure will ever be effected by any other form of suture than the button. The mechanism of this suture is peculiarly adapted to the successful treatment of this rare lesion."

I am not aware that Dr. Bozeman's operation has been objected to on account of want of success, for when skilfully performed all acknowledge its success. The chief and perhaps only objection that has had any effect in preventing it from general favor and practice is complication and consequent difficulty. This need be no objection if the surgeon is prepared with all the instruments now used by Dr. Bozeman; with them the different steps in the operation are easily accomplished. He requires no assistance during the operation, a consideration of no small importance.

, *Entero-vesical Fistula.*

Occasional instances occur in which from cancerous degeneration of the tissues of the bladder and intestinal canal lying in contact they become adherent, and afterwards perforated in such manner as to permit the discharge of the excretions of one organ into the other, thus making an entero-vesical fistula, with the urine passing into the intestine and out at the anus, and causing what urine passed from the urethra to be mixed with fæces. The author had for several months under his care a recto-utero-vaginal fistula. This condition was caused by perimetritic inflammation. The abscess perforated the bladder, uterus, and rectum, and the escape of fæces as well as urine was observed from all these cavities. The fistulous openings were small and must have been tortuous, as these excretions escaped in very small quantities. The patient, a young girl, died of tubercular consumption after having lived in this miserable state eighteen months.

Entero-vaginal Fistula.

This is of two kinds, colono-vaginal and recto-vaginal. The former is very rare, and is caused by malignant ulceration or grave perimetritis. The inflammation, when sufficiently severe to cause communication between the vagina and colon, usually extends up into the abdomen and involves the viscera in that cavity to a very serious extent. The suppurating cavity in this case is also large, and opens in one place into the intestinal canal, and at another point of ulceration into the vagina, and as the cavity of suppuration is slowly filled by granulations a tortuous canal is left, leading from the bowel down into the vaginal cavity. If the opening into the vagina can be found, I see no objection to closing it with the silver suture. After a long time these openings would probably close spontaneouly, as artificial will sometimes do.

Recto-vaginal Fistula.

This accident does not so frequently as vesico-vaginal fistula result from puerperal vaginitis. Stricture of the rectum, abscess of the recto-vaginal septum rupturing into both cavities, and accidents with instruments, perhaps, as often cause it. It is not so common or frequent as vesico-vaginal fistula, nor so distressing. The passage of the fæces, if proper cleanliness is observed, although disgusting, is not so productive of inflammation and excoriation as urine, and their discharge may be controlled by appropriate fixtures. A cure is also more easily accomplished; indeed, it is often spontaneous. As the contents of the bowels pass intermittingly, and, when in contact with the raw surface, do not irritate it considerably, the ulcer has time to contract, and healthy granulations, in a good state of the general health, is the result.

The symptoms and diagnosis of this fistula are so obvious that I need not dwell upon them; but we sometimes meet with cases where the opening is so small and tortuous, that great patience in the use of the probe will be required to satisfy ourselves as to its position and direction. The injection of water into the rectum while the parts are under inspection will generally clear up all doubts.

Treatment.

If we are associated with these cases during the ulcerative condition, we may conduct them to a cure with some certainty, and, perhaps, more readily than after the edges of the opening have cicatrized. The important items of treatment at such times are: 1st, Proper attention to the bowels; 2d, Great cleanliness; and 3d, Maintenance of healthy granulations until the contraction obliterates the opening. The bowels should be kept quiet as much of the time as possible. To accomplish this, the diet should be concentrated and nourishing in character; beef essence, milk, eggs, crackers, coffee, or tea, and if necessary on account of debility, wine, or medicinal tonics; and if the bowels have a tendency to move, opium in such quantities as will restrain them. Every four or five days a gentle alterative, say three grains of blue pill, followed by a saline cathartic; after the bowels have moved from this, the opium may be given to restrain them for four or five days again, and so on until the opening is closed. During this treatment there should be frequent injections of water into the vagina. The part should be examined with the speculum every day, to see that the edges remain raw. Where there is any tendency to cicatrize, the edges may be freely touched with pure nitric acid. If the cure is protracted, the acid should give place to the actual cautery. Toward the last, as the opening becomes small, especially if it is tortuous, a piece of twine, or what is perhaps better, a silver or iron wire, may be passed through it, and the ends brought out through the anus and vagina. If the case is chronic and the opening small, the application of the acid may be made every day until the edges are denuded, and then the same course followed as above directed. Of course, these applications must be made through the vagina with a speculum that completely exposes the part touched.

If the place is large and chronic, we shall very much shorten the process of cure by an operation similar to that for vesico-vaginal fistula. After having thoroughly evacuated the bowels, the patient may be placed in the lithotomy position, and exposing the parts to a strong light, the perinæum may be retracted by the rectangular speculum blade of Sims, while the vulva is held open by assistants. The edges are then to be pared thoroughly, and the aperture closed with silver sutures. The bowels will require the use of from two to four grains of opium daily to keep them quiet. They should not be allowed to move for ten days, when a saline cathartic should be given, and after it has operated well, the stitches removed. During the time between the operation and the removal of the stitches, the patient is to remain quiet in bed, and have injections, per vaginam, of tepid water with soap, twice a day. If by this operation there is imperfect closure of any part, the treatment recommended for recent cases will suffice to complete the cure. Even these larger-sized fistulæ are sometimes cured by the caustic acids, the actual cautery, or tinct. lyttæ; but it takes a longer time, and is attended with more pain and annoyance. The operations on these fistulæ will be greatly facilitated by having the breech of the patient projecting somewhat over the end of the table.

CHAPTER VI.

MENSTRUATION AND ITS DISORDERS.

SEVERAL conditions are necessary to the healthy performance of the functions of menstruation.

1st. The ovaries must be present, and sufficiently healthy to produce ova.

2d. The uterus must be sufficiently perfect, anatomically and physiologically, to be the medium of elimination.

3d. A certain, but not as yet very well-defined, state of the blood and nervous system must exist.

These are, probably, not all the conditions necessary to perfect menstruation; but they are the obvious and undoubted ones.

The uterus, by virtue of the conditions upon which menstruation depends, is naturally a hæmorrhagic organ; and it is in consequence of its anatomical and physiological peculiarities that the ordinary and frequently acting causes of uterine hæmorrhage are rendered so potent and effective.

The more obvious phenomena of menstruation are doubtless the result of a definite reflex nervous influence exerted by the ovaries upon the uterus. Although this influence is more distinctly manifested in the great hyperæmia which precedes the occurrence of the catamenial discharge, and the changes in the utricular glands and mucous membrane of the womb, yet it is unquestionably constant in its action and parallel to that which presides over the motions of the heart, the arteries, and the alimentary canal. Generated in the nervous apparatus of the ovaries, and contemporaneous with the changes called ovulation in those organs, this influence is probably conveyed by afferent nerves to the genito-spinal centre (the existence of which was first established by Budge, of Greifswalde),* or to some other reflecting ganglion, whence it is sent back to the uterus, giving rise to a wonderful series of tissue changes during the month. Some of these changes have been lucidly described by Dr. John Williams, in the *Obstetrical Journal of Great Britain and Ireland*, and by our own talented young countryman, Dr. Engelman, in his recent essay upon the subject, published in the *American Journal of Obstetrics.* These changes are aptly termed by Aveling, nidation and denidation.

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* Ueber das Centrum genito-spinales des N. sympatheticus. Virchow's Archiv f. Path. Anat. und Klin. Med., Band xv, S. 115–126.

A few days before the menstrual flow makes its appearance, the whole uterus, and especially its mucous membrane, becomes greatly hypertrophied and very vascular; when the discharge begins, the membrane is invaded by fatty degeneration. This process is so rapid that, in four or five days, the entire mucous membrane disappears, leaving the muscular structure of the inside of the uterus exposed, while some remnants of the utricular glands are left, and found entangled among the denuded fibres. As soon as the monthly flow ceases, a reproduction of the membrane is commenced, and it continues to grow until at the end of twenty-eight days its menstrual maturity is attained. Accompanying these changes in the cavity of the uterus are others equally remarkable, affecting all the other tissues of the organ. The bloodvessels become enlarged, and circulate an increased amount of blood; the fibrous tissue is developed beyond its intermenstrual condition; while hyperæsthesia indicates extraordinary nervous endowment. In fact a true hypertrophy of the uterus occurs. During the discharge, the process of involution reduces the organ to its smallest dimensions, and the hæmorrhage ceases. The culmination of this hypertrophy in the discharge of blood from the uterus is doubtless not merely an accompaniment, but a consequence of the breach of capillaries in the mucous membrane. These of course are physiological phenomena, but they strongly resemble pathological conditions, and would be so considered in any other organ in the human economy. Moreover, the dividing line between health and disease in uterine hæmorrhage is as difficult to trace as that between sanity and lunacy.*

Puberty.

Puberty is the period at which the development of the human female renders her capable of childbearing.

"An immense revolution takes place in the organization of the young girl. To her thin slender form succeeds a round and graceful contour. Her step, uncertain and hesitating, becomes firm and animated. The sweet and vivacious expression of her eyes evince the ardor with which she is endowed. Changes no less remarkable take place in the system. The chest, narrow and compressed, becomes expanded and full. The lungs act more freely, the heart, more developed, throws the blood with more energy to the remotest parts of the vascular system. The areolar tissue is increased in quantity, fills up depressions and rounds out angles, making those graceful curves in the form that constitute female beauty. Of all the organs that feel the influence of puberty the uterus and its appendages are the most affected by it. In girlhood of small volume, at this period, the uterus, the ovaries, Fallopian tubes, and the breasts become greatly developed. The bones and muscles partake in the general development. The moral qualities of the girl are no less the subjects of change. The young girl, before a mere child in her tastes, inclinations, and desires, experiences a complete metamorphosis. Restless and pensive, she doës not know whence come the novel thoughts that agitate her mind; all her impressions are pleasurable; she is penetrated by a glowing fervor; an unaccustomed pruriency pervades the organs of generation. The most important phenomenon of puberty, its indispensable accompaniment, that which transforms the young girl into a woman, the first menstrual flow, manifests itself."

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* The Causes and Treatment of Non-puerperal Hæmorrhage of the Womb, International Medical Congress, Philadelphia, September, 1876.

This is a translation of the description given by Brierre de Boismont in his *Treatise on Menstruation*. It is a true contrast between girlhood and womanhood. This change is not attained in an instant, but is the work of years, and the development, instead of always being regular, steady, and equable, is in many instances quite irregular, unsteady, and unequal. Imperceptibly (comparing short periods) the lithe, muscular, bony, and angular form of the girl is lost. The bones of the pelvis, the lower extremities, and chest expand and grow, but no faster than during some other periods of girlhood; and the uterus, ovaries, and Fallopian tubes assume their places and acquire their size gradually. At ten years, perhaps, down is observed on the pubis, but does not become well-grown hair until seventeen or eighteen. In from four to eight years usually these changes are complete. Nor does the form assume the becoming loveliness of a mature maiden immediately at the time the menses are first produced.

The general and even the genital development is not complete for years after the first effusion of blood. A description which portrays anything but this gradual change is fanciful and misleads the student. The sentiments and mental habits of the girl when she first begins to menstruate are still childish and imperfect compared with what they become after the completion of her first change of life. Nor do I think it any more correct to say that the changes in the genital organs bring about all the attributes that accompany their development; they are merely contemporaneous with the other and part of the whole.

The development of the body generally, and of the sexual system to a perfect state, usually proceeds together, and ought to be complete at the same time and in the same degree. But these conditions do not always obtain. Occasionally the frame and all the organs but those belonging to the genital system are developed into vigorous womanhood, while the latter do not assume the size and energy necessary for the establishment of the sexual functions; or what is perhaps a more frequent condition, the individual is physically undeveloped otherwise, but possesses great sexual activity if not vigor. In these, the general organization is feeble and imperfect, and incapable of meeting the requirements of womanhood, while the functions of menstruation and childbearing exist in perfection. The physiologist will have no difficulty in predicting in instances of this kind, the influences that will be exerted by the dominant sexual organs. He will see in advance the wreck that will be made of the mind, heart, lungs, stomach, nerves, and other organs by the overwhelming sympathies that must arise from the undue development of the ovaries and uterus.

When this latter system is subordinate in development and function to the system at large, then the full health and vigor of the individual will not be disturbed by the discharge of the sexual functions.

The circumstances by which the girl is surrounded during the time when these puberal changes are going on, have a great influence upon the future health of the woman. This is the turning period in the life of the woman. She is perfected or ruined in that time. According to her development and surrounding circumstances will be her future pathological tendencies.

The development required for efficiency and health, is strength of muscle and heart, and large capacity of stomach and lungs. And it will require but a few moments' reflection to remind the intelligent physiologist that the conditions by which girls at puberty are usually surrounded are not the best adapted to this development. The girl is generally allowed to exercise in the open air in the same unrestrained manner that her little brothers are. She exercises her muscles as much as her brain, and this expands her lungs and causes her heart to grow vigorous, and her stomach to digest well. She has no nervous ailments while such freedom lasts.

She is, however, not more than ten or twelve years old before she is restrained in her childish sports. She is instructed that it will become her more to deport herself like a little lady. Which means that her step must be quiet, her speech less loud and energetic. She must appear in the street only when well dressed, and must conduct herself as becomes a woman. She must learn to sew and draw, which means that she sit still in a stooping posture; or she must go to school to sit and study in a close room with many others, breathing foul air for from four to six hours a day, and when she comes home get her lessons or "tasks" as they are properly called. If she has any more time she spends it in practicing on the piano or receiving company in the parlor. In this round of confining duties the lungs are not expanded to their full extent for many days together; the circulation is slow because there is not action enough to require quickness and energy in the distribution of the blood; the muscles become weak and flabby from inactivity; the nervous system is taxed by study at school and at home, while all the rest of the body is kept in great restraint. The consequences are that debility and excitability are predominant qualities, and the development of the lungs, heart, and muscles does not keep pace with the growth of the brain. If exercise is required, dancing or calisthenics is resorted to, because more ladylike than playing ball or running races in the open air. The amusements of this period of life are not less injudicious. These *children* go to see the minstrels, go to theatres, ballrooms, card parties, and other places, where they meet the opposite sex in such manner as will excite their emotional nature, thus encouraging early sexual development. About this time, between twelve and sixteen, the lungs are confined by corsets that fit "snugly" about the chest, preventing free expansion and the easy play of the diaphragm. Other effects of tight lacing in early as well as later life, is to press the contents of the abdomen down into the pelvis, and prevent a free return of venous blood from the lower part of the body. This downward pressure causes an accumulation of blood in the pelvic viscera, the rectum, ovaries, uterus, vagina, etc., and encourages congestions and inflammations.

These influences, and a long train of others similar in their effects, are kept up from this time forward until the girl is married, and if she is never married always afterwards. What is usually termed education is commenced too early, and falls short of its objects because it is commenced too early. Mental culture is obtained too often at the sacrifice of the general health, and still more frequently at an expense of physical development that forever mars the usefulness of the woman. *Physical* culture should be more assiduous than mental, during physical growth. The mind does not mature as soon as the body, and mental culture should be behind physical growth instead of before it. Six hours' study and two hours' play should be reversed; it should rather be eight hours unrestrained exercise and two hours' study. In writing the above I have very feebly portrayed the evils that usually surround girls at the time when the puberal changes are going forward. Let any one visit our schools for girls of this age, public or private, seminaries or boarding-schools, and see the requirements, restraints, and confinements of the day; let him go home with them and witness their want of appetite, languor, and restiveness, and then see the training from mothers and fathers, who, in honesty of affection, prevent them from going out for fear of exposure or improprieties, and encourage them to learn their lesson or music to the complete neglect of their bodies, and he will be astonished that as many survive the ordeal as now do. More time is necessary for physical development than mental, and until this truth is acted upon our women will become steadily less capable of bearing the hardships of life.

In addition to the want of balance in the development of the physical organization above mentioned, the circumstances of society often cause premature and undue development of the sexual organs. Girls of different ages are congregated in large schools; the younger learn from the older practices and imbibe sentiments beyond their age, which stimulate their passions and encourage too early and too vigorous sexual desires. The dress, the free and easy association of very young people, taught to imitate their seniors, the literature easily accessible and eagerly sought after by them, and many other circumstances incident to children raised in populous cities, are calculated to bring out prematurely and cultivate the amorous sentiments of young people of both sexes. Opportunity is frequently offered to medical men of large experience to see lamentable suffering in young girls, the result of some of these causes. Some of the most intractable cases of uterine disease I have ever seen have occurred in girls undergoing puberal development, traceable to undue excitement of the sexual organs while attending large schools or seminaries for young ladies. During the few years in which the girl is being developed into the woman, she is more susceptible to morbid influences operating upon the uterus and ovaries than at any other time in life, and consequently these organs should be kept as free as possible from the effects of all conditions which excite and stimulate them. During this time her education ought to be one that will keep her muscles occupied in the discharge of useful duties.

This very brief summary of puberal pathology will do for a starting-point in the consideration of the disorders of menstruation.

I shall consider the disorders of menstruation under four different divisions:

1st. Amenorrhœa.

2d. Menorrhagia.

3d. Dysmenorrhœa.

4th. Misplaced menstruation (Metatithmenia).

Under these four heads may be included all the deviations met with in ordinary practice. It is usual with authors to make only three distinct divisions. My fourth division is spoken of by those who have described it as uterine hæmatocele, hæmatoma, etc.; but I shall give what I consider good reasons for classing it under the general head of menstrual disorders.

In the march of pathological science it will not be surprising if, before long, these terms are entirely dropped from the category of disease, and these derangements mentioned as symptoms or errors of function under the circumstances in which they occur. All pathologists agree that they are only symptoms, and teach students to look to the diseases whence they emanate as the proper objects of treatment. The subject is not sufficiently clear, however, to do this now, and it is convenient yet to employ these terms as proper heads under which to group the various phenomena attending them.

AMENORRHŒA.

Amenorrhœa means simply the absence of menstruation, and may appear under several different circumstances.

1st. Menstruation may never make its appearance.

2d. After having occurred it may cease, or, as the term is, be "suppressed;" and, again, this suppression may be suddenly brought about and attended with acute symptoms, and hence properly be denominated acute suppression; or it may not be attended with acute symptoms, and may last long enough to be called chronic.

3d. I think it right to consider deficient menstruation as suppression, although but partial. This partial suppression assumes two forms, viz., *infrequency*, when the intervals are uncommonly long; and *scantiness*, the return being regular, but the quantity of the discharge much less than it should be. Or there may be both scantiness and infrequency.

4th. The menses may be *retained* in the cavities of the uterus or vagina, or both, after having been effused. This retention is very different in many respects from the suppression, giving rise to quite a different set of symptoms, and requiring a separate sort of treatment, agreeing with it only in the non-appearance of the blood externally.

Pathology and Morbid Anatomy.

The pathological states upon which the symptom amenorrhœa is based are very numerous, and sometimes inscrutable. The more obvious are the following: Congenital *absence* of the uterus or ovaries, or both; congenital or acquired *atrophy* of these organs; acute or chronic *disease* of the uterus and ovaries. The general conditions causing it are *anæmia*, *cachexia*, *pregnancy*, and *nursing*, serious diseases of any of the vital organs or nervous system, and occlusion of some part of the genital passage.

Symptoms.

The local symptoms which attend the absence of the menses will differ according to the conditions which give rise to it. In acute suppression we shall have signs of great congestion, or inflammation of the uterus. The patient, after commencing to menstruate, being subjected to the causes necessary to suppression, such as the partial or general application of cold, is seized with pain in the back, hypogastric region, and hips, attended with a sense of chilliness more or less intense. These symptoms are usually succeeded by febrile reaction, headache, pain in the limbs, general languor, white tongue, and a persistent pain of varied severity in the region of the uterus. There is, in this state of things, as there seems to be, inflammation of the uterus and ovaries. The symptoms may subside, and generally do in a very few days, leaving more or less local discomfort in the pelvis and neighborhood. At the next menstrual period, if the uterus is not much diseased, and the system not greatly deranged, the blood is effused, but seldom with the same naturalness in quantity, quality, and painlessness as before; there is often more or less pain, which is manifested henceforth at each successive period.

At other times the discharge fails to show itself after having been thus suppressed, and the case becomes chronic, lasting an uncertain length of time. When this is the case, the non-appearance is likely to be attended by chronic inflammation of the uterus and ovaries, as the result of the acute attack, and the morbid effects brought about by uterine sympathies derange the stomach, bowels, liver, in fact all the chylopoetic organs, to such a degree as to render chymification or chylification imperfect. Sanguification will be thus vitiated, anæmia or cachexia results, and the patient becomes broken down and "miserable." We cannot but see in this catenation of circumstances the complicated effects resulting from inflammation of the uterus.

Should the suppression be primary,—by this I mean to say, should the menses never have made their appearance,—the girl, if old enough and sufficiently developed, will suffer differently. And there is very nearly, if not quite, the same set of symptoms present in cases where they have made their appearance imperfectly in quantity and quality, or for a few times, and then ceased. The patient suffers under the symptoms of imperfect sanguification: inability to exercise, palpitation of the heart, shortness of breath, torpid liver and bowels, want of appetite, or an appetite for improper food at improper times, despondency, great apathy, and timidity. The surface is pale, and either white and translucent, or more commonly of a greenish hue. The sufferings are often very great and protracted, and not unfrequently merge into those of tuberculosis, insanity, or other serious organic diseases. It is not unusual, even in cases where menstruation has never been perfectly established, to find the patient afflicted, also, with symptoms of inflammation of the uterus.

The general symptoms accompanying scanty menstruation, when the scantiness is the result of imperfect establishment, are very much of the above character, viz., those connected with anæmia, etc. But the scantiness and infrequency, as also the entire suppression of menstruation, usually depend upon organic changes in the uterus gradually brought about by chronic inflammation. What these are we cannot always determine. Sometimes, however, we find the fibrous structure condensed until the bulk of the organ is smaller and harder than natural; at other times it is greatly enlarged, as I have verified by examination. The most common alteration is condensation and atrophy. In such instances there will, of course, be quite a different set of symptoms, in fact many if not all the symptoms found described in connection with chronic inflammation of the substance of the cervix and body of the uterus. I need not enumerate them here, but refer the reader to the article in which the general symptoms of these conditions are given. Chronic amenorrhœa, or scanty or infrequent menstruation, is in this way associated with the most miserable states of general health.

We are not to believe, however, that the absence of the menses is the cause of such nervous suffering as we often see associated with it, but that it is caused by the condition of the uterus and other organs upon which the irregularity depends. The non-appearance of the menses on account of the absence of the uterus is not usually attended with the chronic suffering I have here alluded to; ordinarily, and indeed in all the cases of this kind to which my attention has been called the patients appeared to be perfectly well. One of these patients was thirty-three years of age, another twenty-seven, and a third twenty-two, and all of them were in perfectly good health. This is an argument, I think, in favor of the opinion just expressed, that the serious and annoying symptoms arise from the pathological condition of the uterus, or general conditions giving rise to it. The only symptoms these patients complained of at any time that seemed to be attributable to amenorrhœa were the backache, weight about the hips, etc., which denote the presence of the menstrual molimen. In the cases where amenorrhœa exists before the organs are sufficiently developed to assume the function of menstruation, we often observe a good state of health, even after the person has attained to an age when the menses are expected. I have had occasion to see, examine, and watch for several years two cases of chronic amenorrhœa from deficient development of the uterus, and perhaps of the ovaries. They were both married. One of them is twenty-eight years of age, has been married nine years, has never menstruated, has no sexual desires, but lives happily with her husband, and desires to be like other women merely to have a child for him. There are no distressing symptoms in her case. Her breasts and uterus are developed to about the size in a girl of thirteen years of age. There is hair upon the pubes, the mons is well developed, as is also the clitoris. The other has been married three years, is twenty-five years old, and resembles the first completely.

When tuberculosis or other serious diseases cause amenorrhœa they are usually well manifested before the suppression occurs, but sometimes this symptom shows itself so early in the case that it is regarded as the cause of the disease instead of the effect.

From what is said above, the reader will see that suppression is a symptom of the *absence, imperfection,* or *disease* of some of the organs of generation, or is due to some grave *deterioration of the blood* or nervous energies, and that we are to look into all the circumstances which attend upon it, with a view to learn the causing conditions. We shall not always be fortunate enough to ascertain this, and we must then content ourselves with conjecture, and a necessary uncertainty in the treatment we adopt.

Amenorrhœa from Retention.

If the retention dates from puberty the patient at the proper time began to experience the *symptoms* of menstruation. In instances where the retaining condition is acquired, the symptoms will be found to have followed close upon a severe inflammatory or ulcerated state of the uterus or vagina. After the retention is thus established by accident, the symptoms do not differ materially from those manifested where the occlusion is congenital.

At first there are very moderate pains in the region of the uterus at each menstrual period. From month to month the pains increase in severity until they become excruciatingly severe. The pains at each menstrual epoch resemble those of labor, and cause the patient quite as much suffering. They are doubtless caused by the presence of the blood in the uterine cavity, and have for their object the expulsion of that fluid.

Soon after the establishment of this train of symptoms there ensues interparoxysmal suffering, much greater in some instances than others. There is a sense of weight in the pelvis and about the hips, weakness and pain in the back, dysuria, difficulty in evacuating the bowels on account of pressure upon the rectum, etc.

There is, after the first few months, enlargement of the abdomen, which increases more slowly than in pregnancy. The tumor is of the shape and in the position of the uterus, and fluctuates obversely upon percussion.

Diagnosis.

It is not usually difficult to determine positively when there is amenorrhœa, and yet there may be good reason to doubt in some instances. It is not necessary that there should be an effusion of blood to constitute menstruation, for there are periodical discharges from the genital organs which indicate the process of ovulation, and, under certain conditions of the system, are more appropriate than an effusion of blood. I allude to a periodical discharge of mucus or sero-mucus. The uterine congestion is not sufficient in quantity or force to give rise to hæmorrhage, but causes effusion of the thinner portions of the blood.

We are often obliged to treat patients for a time without having more than their statements as a basis for our diagnosis, but fortunately, in most cases, this is sufficient. We are not justified, however, in continuing the care of an obstinate case for any length of time without making an effort to verify or ascertain the fallacy of the grounds for our opinion. And, if need be, we must resort to physical examination. The fact of our patient being a virgin should cause deference, but not forbid an examination indispensable to a correct understanding of the cause of a condition that is destroying her life. I need only mention that suppression, attended with acute inflammation of the uterus and ovaries, will be attended with marked and almost invariably unmistakable symptoms. The pain, fever, tenderness, and sympathetic symptoms will leave no room for doubt. Anæmia, cachexia, nursing, etc., are obvious conditions, and will be easily made out by very little attention.

Correctness in diagnosis may be attained with great certainty when there is physical defect in the genital organs, by proper direct examinations of them, and they should be instituted when other means fail to satisfy us. The presence or absence of the uterus, in most instances, can be satisfactorily determined by introducing the finger into the rectum and a catheter into the bladder, and approximating them. If it is present, its thickness interposed between the two will prevent the finger from defining the shape of the instrument; if it is absent, they may be made to touch with the intervention of the walls of the rectum and bladder. The catheter, in this examination, should be introduced deep into the bladder, and the finger as far up the rectum as possible. With this precaution, there can hardly be a mistake. I have met with several instances of congenital absence of the uterus, and in all the vaginæ were absent, but each case presented all the external evidence of womanhood. The mons veneris was perfect and covered with hair, and the clitoris, labia majora, and breasts were well developed. The patients had the demeanor of women, and assured me that their desire for the society of men was as great as usual, and that they experienced strong sexual feeling. One of them had married, and was defending herself in a suit for divorce, upon the ground of her entire ignorance of any anatomical defect in organization; another was about twenty-two years of age, and submitted to an examination with the hope of having a correction of the physical defect, preparatory to entering matrimony. It is possible that the vagina may be absent while the uterus is perfect in formation—the same examination will furnish us with proof —or the vagina may be occluded from defect of formation. This can be determined in the manner I shall presently describe. Absence of the ovaries cannot always be determined by physical examination, but there is generally such a complete absence of the signs of womanhood in these cases that we cannot long hesitate. The mammæ are not prominent, the manners peculiar to the sex, desire for the society of males, and sexual propensity, are absent. There is no hair on the pudenda, and the whole external organs are not developed. The signs are the same at any age. The patient at mature age presents no more evidence of sexuality than the little girl.

I have very recently met with an instance of *congenital atrophy* of the uterus. The patient, although now twenty-eight years of age, has not menstruated, unless, as she doubtfully said, twice very scantily when about seventeen years of age. She is rather above medium size, and possesses all the characteristic appearances of womanhood. She has enjoyed fair health until the last twelve months. For the past year she has suffered from distressing palpitation of the heart, which almost incapacitates her for business. She has been married nine years, during which time she has enjoyed sexual intercourse indifferently. She has no monthly pains, the signs of menstrual congestion, and nothing by which to know when to expect that function. Her mammæ are about the size in a girl of thirteen or fourteen years, the diameter being about two inches and a half, with a thickness at the nipple of about three-quarters of an inch. The nipples are very small. The labia and mons veneris are undeveloped and the vaginal orifice is narrow. The uterus could be felt in its usual position or rather higher up in the pelvis, but was very light and small. When the fingers were placed under it in the vagina, and it was pressed down from above, it gave the sensation of diminutiveness, apparently not exceeding half its natural size. The ordinary uterine sound would not enter it more than half an inch. A probe, with an extremity about the twelfth of an inch in diameter, freely passed up one inch and a half. From all this, it was plain that the uterus was in a state of atrophy; and I infer that the ovaries were so, from the absence of the nervous signs of menstruation.

The size of the organs, as measured by the plan above indicated, determines, together with the history of the case, that it is congenital atrophy. Acquired atrophy is confined generally to the uterus, while congenital atrophy generally involves all the genital organs, including the breasts and nipples.

I have met with a number of instances of *acquired atrophy*, which by carefully tracing their history, I could attribute to early miscarriage, which it seemed to follow. And this atrophied condition, doubtless, was hyperinvolution of the organ after abortion. In looking over the menstrual history of these sufferers, there was a time when they menstruated normally, and the function was disturbed after having been thus established.

When amenorrhœa is attended by chronic inflammation of the uterus, a not unfrequent occurrence, the speculum and probe will reveal the condition beyond the probability of making a mistake. I have seen the worst forms of indigestion, and very great emaciation, attend this condition; in fact, I have seen no other benign disease of the uterus produce so much emaciation as this. The patient is sometimes bedridden for months. In two instances recently cured by local treatment and proper dietetics and hygienic regulations, the patients had been reduced to two-thirds of their ordinary weight.

Diagnosis of Retention.

Upon examining the genital canal it will be found occluded at some point between the external labia and the internal os uteri. If the hymen is imperforate the vagina cannot be penetrated. If the occlusion is higher up, it may be found by the finger and probe. By introducing the finger into the rectum and a catheter into the urethra, the bladder and rectum will be found widely separated, the catheter passing up close behind the pubis, and the finger being pressed strongly against the sacrum. The finger in the rectum will easily determine how near the external organs the obstruction is.

The history, the non-appearance of the menstrual fluid, the slow enlargement of the abdomen, *periodic painful paroxysms*, and the occlusion of some part of the vagina or uterine cervix, are quite enough to distinguish it in most cases.

Auscultation and palpation will establish the diagnosis between retention and pregnancy.

Prognosis.

The curability of amenorrhœa will depend on the causing conditions. When occlusion of some portion of the genital canal prevents the discharge of the menses, we can usually, by surgical means, evacuate it, and establish an outlet for the future. Although simple and easy of accomplishment, the evacuation of a long-retained and considerable accumulation is always attended with hazard. In the first place, inflammation may foil our efforts to establish a permanent viaduct for the blood which may be discharged from the uterine vessels; and in the second, this process may be so great and extend to the peritoneum in sufficient intensity as to cause the death of the patient. Amenorrhœa from anæmia may be pretty surely cured; it is the curable variety compared with those occurring from other causes. When arising from inflammation, it will also generally yield to appropriate treatment, as the cure wholly depends upon the removal of the causing conditions. The cachexia which may produce amenorrhœa is often entirely incurable, and, therefore, our prognosis must be unfavorable when they are associated.

In cases of absence of the ovaries or uterus, we can expect to do no good by treatment. Where there is only atrophy of the organs, we may hope that some of the ingenious contrivances to increase their development which our profession of the present day affords (they have almost all emanated from, or been perfected by, the fertile genius of Professor Simpson, of Edinburgh), may enable us to succeed. It cannot be concealed, however, that these causing conditions will often resist every means within our reach. To sum up, then, according to my observation, when suppression arises from any other causing condition than general anæmia, or inflammation of the uterus or ovaries, the prognosis is not very promising, and we should be cautious in promising a permanent and speedy cure. Failure in the function of menstruation is pretty sure to be accompanied with an inability for conception; imperfection of it is, likewise, very frequently an evidence of barrenness. This is particularly the case with scantiness. When menstruation is infrequent, but the function is otherwise perfect, the patient is often prolific. I have known a woman for several years, who does not menstruate more than three times in a year, and then not at regular intervals, and yet in the last six years she has had two children, conception following immediately after one of these irregular menstrual discharges.

Treatment.

We should always bear in mind the fact that amenorrhœa is but a symptom, and endeavor to amend the condition or disease upon which it depends. This rational mode of procedure, however, is not always practicable, for unfortunately, as has been more than once stated, we cannot in every instance ascertain precisely the condition. In such cases we make use of remedies, or plans of treatment, which, from the success that has occasionally followed their use, have gained the title of emmenagogues. This term signifies promoter of menstruation. Are there any direct emmenagogues? I think, in the nature of things, there cannot be. To cause a flow of the menses proper, which depends upon ovulation for its existence, they must produce or promote the evolution of ova. That there are remedies and plans of treatment which indirectly promote the menstrual discharge I think there is very little doubt. In a general way we ought to consider this class of remedies as producing their effects in two different modes, one by causing the growth and production of ova, and the other the discharge of blood as a hæmorrhage. It would be better, then, to say that they are oviferous in their nature in the first case and hæmorrhagic in the second. To the first order belong the preparations of iron and other mineral and vegetable tonics, nutritious diet, exercise in the open air, diversion of mind, travel, sea-bathing, and, in fact, everything which, by correcting derangement of the vital organs and generating good blood and plenty of it, is promotive of healthy functional action generally. To the second belong aloes, savin, cantharides, and any hygienic measures which determine blood to the pelvic organs, as foot, hip, and leg baths, sinapisms to the feet or legs, etc. In many instances they may very properly be combined.

When amenorrhœa results from cold applied to the surface or lower extremities, or from any cause suddenly acting to suppress the flow, the uterus and ovaries are bordering on, if not in, a state of acute inflammation, and the remedies for it should be directed to the relief of the diseased organ or organs. The question very naturally arises, can we, or ought we to, do anything to cause the return of the flow immediately upon its suppression, and if so, what? Experience teaches us that if the flow can be reproduced in a very few hours after its suppression, before general reaction occurs, the turgid and phlogosed condition of the sexual apparatus may subside into a condition of health, and that this can sometimes be done by judiciously managed stimulation; but if the flow is not re-established in a few hours, we need not expect it to recur until the next period, if then, and it is injudicious to continue stimulation beyond a very short period. Then what is the proper course of stimulation? If our attention is called to the case within a few hours, and there is not much febrile reaction, we may very properly direct a hot bath to the whole person of the patient below the waist for half an hour. The patient should then be put in bed, and large sinapisms placed upon the inner portion of the thighs and hypogastrium, and allowed to remain until a strong rubefacient effect is produced, when they may be removed, and the whole replaced by a hot linseed-meal poultice. While these measures are being accomplished, we should administer copious draughts of some kind of warm tea. I cannot approve of the gin-slings or toddies given so freely under these circumstances; they often do harm by their excessive stimulation, rendering the inflammation a fixed evil.

Should the flux not return in twenty-four hours from the time of suppression, it would be unreasonable to expect and injudicious to continue treatment to cause it to do so. It then remains for us, if possible, to remove the phlogosed condition of the organs, so that they may be in a state to resume their functions at the return of the next ensuing menstrual period.

It will be found, I think, that for the first month, in case of an acute suppression, especially in plethoric patients, the most successful course of treatment will consist in moderate antiphlogistic and alterative means, kept up steadily. The one I have ordinarily followed consists of counter-irritants to the hypogastric region; the hip-bath twice a day of tepid water; six to ten grains of blue mass every third night, to be followed in the morning by a seidlitz powder; and abstinence from all stimulants and highly seasoned food. If, however, the suppression continue beyond the second period after the suppression, it may be attended with chronic inflammation, with or without general anæmia, etc., and will come under some of the conditions hereafter to be considered.

Amenorrhœa connected with chronic inflammation of the uterus or ovaries may be treated as I have elsewhere directed those affections to be managed. I think that it is not very common for suppression, in the chronic form, to depend upon inflammation alone. More frequently the causes of amenorrhœa exist in the condition of these organs that remains after inflammation, such as condensation of fibrous tissue, either with or without atrophy. The same treatment, with little variation, is applicable to both. I shall have occasion to detail the treatment in speaking of atrophy and want of development.

Another condition which succeeds inflammation of the uterus and ovaries, after an acute suppression, is anæmia. For there certainly are cases in which an impoverished state of the blood succeeds an acute suppression, and in turn prevents the re-establishment of the flow. A tonic, roborant treatment, applicable to anæmia arising from other causes, may be instituted, if need be, even before the inflammatory condition of these organs has entirely subsided. Perhaps a little more attention to alteratives, in connection with the tonics, is necessary in this class of cases. When anæmia is the primary condition upon which amenorrhœa depends, it will almost always be found dependent upon some preceding affection. Indigestion, connected with a slow or depraved state of the secretions of the alimentary canal, often, by preventing the introduction of nutritious elements into the blood, induces anæmia. This condition arises, for the most part, in one of two ways,—either the nervous energy necessary to the sustenance of the functions is diverted to other objects, as mental training in the school-girl, or the circulation in the abdominal organs is too sluggish on account of sedentary habits, as with the sewing-girl.* Sometimes want of exercise and too great a tax upon the brain from studies, anxiety, etc., co-operate in the same individual. Anæmia may be produced by a great variety of causes besides those above-mentioned, but, according to my experience, these are far the most frequent. I would not have the reader believe, because I have given the school-girl and the sewing-girl as instances of amenorrhœa, that they are the only persons in whom the same character of causes operate in the same way. Very many fashionable young ladies, who might enjoy the blessings of relaxed, diverted, or healthily employed minds, and appropriate and enlivening exercise, become anæmic from sheer laziness and the nervous anxiety connected with envy.

Bearing in mind, then, the causes of indigestion and anæmia, we must, first of all, thoroughly revolutionize the habits and circumstances of the patient, making plenty of outdoor exercise one of the main conditions. Riding in a carriage is not outdoor exercise for these patients; they must ride on horseback, or, what is very well, walk, run, and romp. An excellent sort of diversion for the mind is occupation in domestic duties, making beds, sweeping, cooking, washing, caring for and attending children, etc. The mind and body are both employed in a varied and diverse manner in these household duties, and it will be found that exercise both of body and mind is most profitable as it is most diverse and varied. While it is true that some kinds of exercise, as walking or riding, may be made to call into play a great many muscles, yet the whole routine of duties presenting themselves in the business of housekeeping, by personally doing the work, is more beneficial than all others devised. This lesson is taught by the contrast between the young mistress and her servant.

In addition to the adoption of a more rational course of habits for the patient, much may be done by the judicious use of medicines. Almost invariably the tonics must be preceded by, or accompanied with, alteratives and laxatives. The stomach will no more recognize and respond properly to a tonic that is intrduced into it until prepared by correcting the secretions, quickening the gastric circulation, and unloading the bowels, than it will digest food under similar circumstances. The alteratives suitable, generally, are mercury in some form, taraxacum, and turpentine. When the bowels are torpid, the stools dry and of unnatural color, particularly if the color is light, from three to six grains of blue mass, given every third night, and followed next morning by a seidlitz powder, or sufficient sulphate of magnesia to cause one or two evacuations, is an admirable alterative. Ten grains of good extract of taraxacum, with a minute quantity, say the twentieth of a grain, of bichloride or biniodide of mercury, three times a day for two or three days, generally does very well. The mercury should not be given with the taraxacum longer than three days, and then intermitted for a week, but the taraxacum may be given steadily for weeks. An excellent alterative for the stomach is Venice turpentine. Ten grains three times a day after eating, on sugar, alternated or given with some of the mercurial preparations, proves often of great service. I cannot but mention the compound confection of black pepper, made in imitation of Ward's paste, as having frequently an excellent laxative and corrective effect on a weak state of the stomach accompanied with constipation. I have known it to cure some of the most obstinate cases of constipation attended with anæmia.

If there is not scantiness of secretions, but slowness of peristaltic movement, we ought to depend on rhubarb and aloes. The compound aloetic pill is a good preparation. In the selection of tonics we should bear in mind the difference between the stomachic and blood tonics. Iron is, perhaps, the only direct blood tonic, while there are a great many articles that act as stomachics. Almost all the bitter vegetables ranged under that head in the books are useful under certain circumstances. The stomach tonics, by improving digestion, are indirectly blood tonics, so that they are sometimes all that are necessary. In many instances, too, the stomach must be prompted by the bitters, or other stomachics, before it will absorb or assimilate iron. The bitter may precede the iron, or be administered simultaneously with it. It is sometimes convenient and profitable to combine the alterative and stomach tonic. A mixture of this kind, often used, is the compound tincture of cinchona, with bichloride of mercury dissolved in it. The tincture of gentian, or colomba, answers very well compounded with mercury. Extract of gentian and Quevenne's iron compounded in a pill produce good results on the anæmic patient. If we understand the principle that governs the treatment in such cases we may readily find the means to accomplish our ends, by alteratives, stomach tonics, and blood tonics.

The cachexiæ, several of which interfere with the regularity of the function of menstruation, must be treated as if the menses were present in their normal quantity, and in these cases the amenorrhœal complication is of no importance, hence special efforts to restore the flow are injudicious, and in most cases injurious.

In cases of defective nervous energy we may expect benefit from the direct application of electricity to the uterus, or to the nerves that supply it. In a paper, recently read before the New York State Medical Society, by A. D. Rockwell, M.D.,* I find the following statement:

> "Amenorrhœa is a symptom that yields, perhaps, more readily to some one of the many forms of electrization than to any or all other methods of treatment. In cases dependent on, or associated with, general debility general electrization is of course indicated; but where all external efforts have been fruitless, internal electrization is not infrequently followed by an immediate and satisfactory flow."

He gives a case as illustrative of the efficacy of his method of performing local electrization:

> "I introduced a cup-shaped metallic electrode to the uterus, so that the os was completely surrounded, and applied the positive pole firmly against the abdomen immediately above the pubes. The current, which was of considerable strength, I reversed rapidly a number of times during the seance, and on the following day repeated the application. In less than six hours after making the second attempt, slight signs of returning menstruation were manifest, and steadily increased until, as regards quantity, the flow was quite natural. The patient was immediately relieved of all her distressing spasmodic symptoms, and at the present time (three weeks having elapsed since the treatment) still remains free from them."

Query. Was this menstruation or metrorrhagia?

Dr. Parvin, in the same journal, says:

> "The positive electrode passed into the uterine cavity, the negative applied to the hypogastrium, gives oftentimes a very prompt success in inducing a sanguineous discharge from the uterus; but in order that such result should follow, this means should be used only at a time when the other phenomena of menstruation manifest themselves, the flow only wanting."

The faradic is the form of electrization recommended by both these gentlemen.

In patients well developed in most respects, whose genital system is deficient, the menses cannot be produced unless these organs grow and become more active. Anything that will stimulate these organs will occasionally bring this result about. Wedlock is a remedy sometimes. The indulgence in society, and the recreations of it, in company with men, sometimes, through the moral faculties, stimulate the genital organs towards development. The stimulus thus afforded by society is one of the beneficial effects resulting from the change of habits in young girls who go to boarding-schools until sexually dwarfed by confinement to the uninteresting society of their own sex.

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* American Practitioner, May, 1872.

Professor Simpson has recommended an instrument, which he calls an "intrauterine pessary," to bring about this development. It is equally applicable to cases of atrophy of the uterus arising after the menses have been established. I have had occasion to use it, and am now employing it in the interesting case to which I have alluded above. It is *theoretically* better, I am afraid, than it will be found *practically;* yet there is no doubt much good may be done by it. The object of the intrauterine pessary is to be the medium, or generator, rather, of galvanism, to stimulate the nerves of the uterus.

Both of these effects are promotive of uterine hæmorrhage, if not of correct menstruation. They are necessary to the development of an atrophied uterus, whether congenital or acquired. But this instrument is recommended and used in obstinate cases of amenorrhœa, where there is no apparent deficiency in the size and development of the organs concerned. It is in this class of cases that most may be effected by it, and yet it sometimes entirely fails to produce any effect. To do good in the cases of atrophy and want of development it should be used continuously. Where the development is good, I am inclined to think that the pessary will do more good by using it intermittingly. In these cases we may introduce the instrument and allow it to remain one week before the time of the expected period, and then, after the time is passed, remove it, and again introduce it at the proper time. We should remember that we cannot use an instrument of the same size in all cases. In the uterus that is much atrophied it would be violence to use an instrument that is applicable to a fully developed organ. In the former we must have an instrument that will pass into it easily, and in a couple of months use one larger; and after the lapse of a similar time make another one still larger, etc., until development is complete. The instrument is made of copper and zinc, and consists of a stem and bulb. The bulb is hollow, in order to be light as possible, flattened, and oval in shape, one inch long, three-quarters of an inch wide, and half an inch thick. It should be perforated through its thinnest diameter by a hole two-twelfths of an inch in diameter. Into this perforation the stem is to be inserted. The stem should be two inches long for a uterus not atrophied, and as much less as is necessary, in the judgment of the attendant, when atrophy has taken place. It should be hollow and light like the bulb. The bulb, and one inch of the stem next the bulb, is made of copper, the extremity of the stem of zinc. This completes the instrument as made and used by Professor Simpson. I find, in some instances, great difficulty, if not an entire impracticability, in wearing it, on account of its tendency to fall out. Sometimes, too, the galvanic stimulus is not sufficient. On these accounts I have made an addition to it, which, I think, adds to its efficiency as well as security of position. This consists of a zinc ball, about an inch in diameter, attached to a copper rod four inches long. The ball is introduced into the vagina after the intrauterine pessary has been introduced, while the stem is attached to a framework outside the pelvis to keep the whole in position. As will be seen by a study of this apparatus we have quite a galvanic battery, the copper rod reaching from the framework of zinc outside to the zinc ball inside, this last lying in contact with the copper bulb of the pessary, etc. If we do not desire any galvanism in the case the whole apparatus can be made of copper. Made in this way the instrument is quite efficient. The young physician or student may be embarrassed in his attempts to introduce the pessary without a little consideration. The plan I have found most convenient is, to expose the os uteri by means of the quadrivalve speculum; secondly, to secure the pessary by inserting a piece of whalebone, properly shaped, in the perforation in the bulb; thirdly, thus mounted, to insert the stem, and with great gentleness urge it forward to its full length, or until it is arrested by the contracted internal os uteri or the end touching the fundus. If this arrest occurs the instrument is either too large or too long, and must be replaced by one more suitable in this respect. After the pessary is inserted we may withdraw the speculum, and, if necessary, apply the ball and external framework above described to keep it in position. All this direction does not include a fact which should ever be borne in mind by the student, viz., that sometimes the instrument is utterly intolerable; and, at others, a good deal of address and patience is required to habituate the parts to it. The patient should be forewarned that pain and inflammation are the possible effects, and that she must inform us should they be considerable. There is always some pain, sometimes a great deal. When the irritation is too severe the instrument must be removed, quietude observed, and, if necessary, anodynes, and even antiphlogistic treatment must be resorted to, to remove the symptoms. After all these have subsided it may be again introduced. A little perseverance and care will render most cases tolerant of its presence. During the time the instrument is used the vagina must be thoroughly cleansed, at least twice a day, with tepid, warm, or cold water, and fine soap, used as injections.

CHAPTER VII.

MENORRHAGIA AND METRORRHAGIA.

HÆMORRHAGE occurring at the time of menstruation beyond the usual quantity is menorrhagia. Hæmorrhages occurring at other times do not belong to this denomination, but are called metrorrhagia. Often both metrorrhagia and menorrhagia occur in the same individual, which depend upon the same conditions of the system or reproductive organs, and are alike symptomatic of some local or general disease.

It is not difficult to understand that an exaggeration of the hyperæmia, or an unusually rapid disintegration of the uterine mucous membrane, would cause more than a normal amount of flow, nor that a want of accordance in time might be followed by the same result. Indeed most cases of uterine hæmorrhage are traceable to conditions which disturb the equilibrium of these phenomena. The causes which thus act are varied and numerous.

Morbid nervous influences, which increase the discharge of blood from the uterus, sometimes emanate from the nervous centres, and hence may be properly termed *centric;* much more frequently, however, they are reflected through the nervous centres from other and sometimes distant organs, and these last are entitled to the denomination of *reflex* or *eccentric* nervous influences.

Mental and emotional excitement emanating directly from the brain, and cerebral and spinal excitement originating in inflammation or functional exhaustion of the brain or spinal cord, are examples of *centric* etiological influences. Many years ago I witnessed the ravages of an epidemic of cerebro-spinal inflammation, in which uterine hæmorrhage was of almost universal occurrence among those adult females who fell under its influences.

Morbid *reflex* nervous influences afford a more numerous class of causes. First among them, both in frequency and importance, are those arising from abnormal conditions of the ovaries, such as congestion, inflammation, displacement, and erotic excitement. Next to the influence of these bodies is that exerted by the mammary glands. Menstruation is generally more profuse when it occurs during lactation. The effect of mammary irritation in causing congestion of the uterus, and thus promoting hæmorrhage from it, is well illustrated by the familiar fact that sinapisms or blisters applied to the breasts will often cause metrorrhagia. Vesical irritation, or inflammation, which gives rise to tenesmus, rectal irritation, as from the presence of hæmorrhoids or ascarides, and dysenteric inflammation, through the reflex influence which they exert upon the uterus, are generally recognized causes of uterine hæmorrhage. Among other reflex causes may be mentioned certain forms of indigestion, hepatic congestion and inflammation, and some of the disturbances of the small intestines, as may also strong impressions upon the cutaneous surface, as from cold, or from the long-continued application of heat in warm climates and seasons.

All of these last-mentioned causes I think act through the reflex system of spinal nerves, and perhaps also through the agency of the sympathetic ganglia, which perform a reflex function between the viscera. The morbid effects of the various reflex nervous impressions are rendered more effective and intense by the presence of such uterine diseases as predispose to hæmorrhage by increasing the vascularity of the uterus.

Many *pathological conditions* which conduce to the production of uterine hæmorrhage, independently of direct nervous influence, act by increasing the hyperæmia of the uterus. When the mucous membrane is granulated, or is the seat of inflammation, of fibrous polypus, or of malignant fungus, the circulation of the uterus is increased, and harmony in the process of nidation disturbed; and these conditions will be accompanied by an unusual and long-continued flow of blood. Subinvolution, congestion and inflammation, hyperplasia, tuberculosis, cancerous and fibrous deposits in the muscular structure, and chronic and acute endometritis, in addition to preventing the normal deciduous changes in the mucous membrane of the uterus, maintain a permanent hyperæmia, and thus render the womb prone to large losses at each return of the menstrual period. We have, in fact, abundant reasons for assuming that chronic hyperæmia, no matter how produced, will, by virtue of the malnutrition connected with it, prevent menstrual changes from being effected in an orderly manner, and thus render the mucous membrane more frail in organization, and consequently incapable of resisting the force of vascular pressure to which it is periodically subjected.

Besides the causes of uterine hyperæmia last alluded to, and existing within the tissues of the womb, there are many other *outside pathological conditions* acting in a different way. Some of these cause venous hyperæmia by mechanical retardation of the circulation, while others give rise to both arterial and venous hyperæmia by nutritional attraction, and others again cause arterial hyperæmia alone, by forcing unusual amounts of blood into the organ. Among the most frequent and important causes of *venous* retardation are displacements and flexions of the uterus—procidentia, retroversion, and retroflexion—the former by stretching the veins and rendering their course more tortuous, the latter by twisting them, and thus lessening their calibre; exudations into the cellular tissue and peritoneal pouch, from cellulitis and local peritonitis, and effusions of blood in the cul-de-sac of Douglas, in retro-uterine hæmatocele, by pressing upon the veins, prevent a free return of blood from the uterus, and thus cause venous hyperæmia. Retardation of movement in the uterine veins may also be caused by obstruction to the venous circulation quite remote from the womb, as by the pressure of a tumor upon the ascending vena cava, by a loaded condition of the large intestine, by dislocation or enlargement of the liver, by obstruction to the free passage of blood through the heart from valvular disease, and even by certain pulmonary affections.

In the class of causes giving rise to both *arterial* and *venous* hyperæmia may be mentioned fibrous, fibrocystic, polypoid, and fungous growths of the fibrous structure of the uterus. These all increase the flow of blood to and through the vessels of the uterus, both arteries and veins are increased in capacity, and to these changes is added general hypertrophy. In these cases the hyperæmia of all the tissues is sometimes enormously great, and the losses of blood are proportionally large and dangerous; the hæmorrhage, unlike that from venous obstruction, is not checked by the emptying of the vessels, but continues until the arterial and cardiac *vis-a-tergo* is weakened by approaching syncope.

Causes producing *arterial* hyperæmia alone are hypertrophy of the heart, general plethora, febrile excitement, and violent exercise. The uterine hyperæmia in these cases is caused by unusual arterial and cardiac pressure alone. When not attended by local pathological conditions, the hæmorrhage in these cases is not apt to be serious.

Other not uncommon causes of hæmorrhage from the womb are various *diseases of the blood*. Among these may be mentioned scurvy, leucocythæmia, chlorosis, albuminuria, and syphilis. It is not likely that the vice in the composition of the blood is the sole causative influence operating in the above-named conditions. In scurvy, for instance, we know that the solid tissues, whether as a primary condition or as an effect of the blood-changes, are diseased, the capillaries more fragile than natural, and, consequently, less capable of resisting the cardiac impulse. As evidence that the vicious condition of both blood and solid tissues is the cause of uterine hæmorrhage in scurvy, the well-known fact may be added that bleeding is very easily provoked in other mucous membranes. It is the more likely to take place from the mucous membrane of the uterus, because of the great normal fluctuations in the circulation of that organ, and also because the vitiated state of the blood would naturally cause disturbance in other conditions attendant upon menstruation, especially the decidual changes. It will be seen therefore that the peculiarity in the operation of this variety of cause is not due to the presence of local or general hyperæmia from retardation of the venous circulation, or from arterial and cardiac pressure, but is due to the tendency of the blood to escape through the walls of the vessels, and to the inability of the capillary tubes to resist the circulatory force ordinarily applied to them.

As another cause of hæmorrhage from the womb, must be mentioned the well-known law of the human system, to continue a long-established *habit* after the original cause is removed. This is probably the only rational explanation of those rare uterine losses which are sometimes observed in pregnancy and in cases where both ovaries have been removed. The habit of bleeding continues after the ovarian reflex nervous influence has been withdrawn from the uterus.

Still another rare yet very dangerous cause of uterine hæmorrhage is that known to surgeons as the *hæmorrhagic diathesis*. The writer has seen one case in which he believes that the bleeding was clearly attributable to this mysterious condition, and which proved fatal. It was that of a young girl who died with her second menstrual flow.

The wide range of causative conditions found connected with uterine hæmorrhage is but an inverse exhibition of the sympathetic relations of the uterus. When diseased, it exercises an almost universal pathological influence upon other organs, and, as a consequence, it is susceptible of being impressed to the same degree by certain morbid conditions of all important viscera. It will not be regarded as making an undue claim to say that the practice of gynæcology requires a more thorough theoretical and practical familiarity with the details of all the branches of medicine than any other of the so-called specialties. We are not prepared to treat the most common of female diseases without being able to scan with scientific scrutiny every organ and function of the body. Nor until we can compete successfully with the general practitioner, the surgeon, the alienist, and the neurologist in the therapeutic processes of their respective departments may we hope to exercise in the highest sense the office of the gynæcologist. These remarks apply with force to the comprehension of the causes and treatment of hæmorrhages of the unimpregnated and non-puerperal uterus.

Treatment of Menorrhagia.

I find it quite impossible to satisfy myself as to the best order in which to bring forward the various measures proposed for treating uterine hæmorrhage. Those which have for their object the removal of the causing conditions, properly fall under the head of *curative* means; while those which we employ to stop the bleeding temporarily, until the remedies of the first order have accomplished their purpose, seem as naturally to belong to the category of *palliative* measures. We find in each of these divisions, however, remedies which act in both ways, and the palliative means are often radical and energetic. Notwithstanding the many obvious deficiencies in this arrangement, it seems to me to be the best that I can adopt.

Palliative Treatment.

Before entering into a detailed description of the more essential remedial methods of curing the various forms of hæmorrhage it will be profitable to consider some of the important minor measures which are applicable in almost all instances. As the great majority of hæmorrhages occur at the menstrual periods, we often have opportunities of adopting measures in anticipation of them. These measures are sometimes calculated to entirely prevent an exaggerated flow, and at others to very much modify it; and in all to greatly promote the action of more direct remedies. The patient should abstain from all causes of local or general vascular or nervous excitement. Among these causes are mental and bodily fatigue, emotional excitement arising from certain social relations, sensational books, and the contemplation of erotic objects. The patient should also abstain from stimulating drinks and highly seasoned food; her clothing should be loose and cool, so that no part of the body may be constricted, and the genital organs should not be too warmly covered. Her bowels ought to be kept regular, or rather free. The secretions from the skin, liver, and kidneys should be maintained as nearly as possible in a normal condition, and tonics, such as arsenic, strychnia, and quinia, with digestible, nourishing, and unstimulating diet, should be given in quantities sufficient to keep the health up to the normal standard. Other things which will contribute very greatly to good results are plenty of pure air, night and day, and moderate muscular exercise. Many other general directions will suggest themselves, which I cannot stop now to mention.

When the time for the paroxysm has arrived, and the hæmorrhage has commenced, isolation, quietude, and recumbency are very important precautions to be enjoined. Position, indeed, may be made to do much good of itself. If the hæmorrhage is not severe, mere recumbency will be sufficient; but if it is protracted, the hips should be elevated, and sometimes it will be beneficial to raise them so high as to cause the blood to gravitate to the fundus uteri, and to fill the whole genital canal before any of it passes out. To a considerable extent this may be made to act as a tampon. The position chosen to effect this object may be on the back, or upon the knees and chest. If the latter position can be commanded, it is much the best, as the reversal of gravitation is more complete. Cold and acid drinks, cold applications to the hypogastric and sacral regions, hips, and vulva, and in the vagina, are also among the remedies applicable to almost all cases. Many practitioners value astringents, administered internally, in uterine hæmorrhage, but I have found so little benefit from them when not given with opium or belladonna, that I seldom resort to them. Where there is much pain in the pelvis, and a dry state of the skin, opium and ipecacuanha are often very serviceable. Lobelia, gelsemium, digitalis, aconite, and veratrum viride, may also be mentioned as very frequently applicable where there is vascular and nervous excitement.

Perhaps the medicine most generally applicable in paroxysms of uterine hæmorrhage, is ergot. In all cases of local arterial hyperæmia, as in tumors, hyperinvolution, etc., we may expect good from its employment. But it will generally fail to be useful when the uterine hyperæmia is venous, as in retroversion, pelvic infarction from periuterine effusion, abdominal tumors, etc. It will not act efficiently in cases of carcinomatous deposit, granulations of the mucous membrane, or tuberculous degeneration of the fibrous texture of the uterus.

In the more dangerous instances of hæmorrhage, these moderate palliative measure are not sufficient. In some, the amount of loss is so great, and occurs so suddenly, as to threaten the life of the patient. Or, if life is not in danger, the discharge may be sufficient to lead to other very serious remote consequences. These emergencies are to be met by such means as will promptly arrest the flow, and keep it in check until curative processes can be instituted. Fortunately this may be done with great certainty by mechanical and chemical appliances generally at our command. The genital canal, practically closed at its upper extremity, and conveniently open at its lower termination, admits of being impacted to an impermeable degree, and allows of topical applications to its whole extent. In using either form of these topical measures, the effort should be made to apply the remedy as near to the bleeding point as possible.

When practicable, we may secure the best effects by employing the mechanical and chemical means conjointly. The *mechanical* means embrace the different forms of the tampon. Plugging arrests the hæmorrhage by forcibly opposing the evacuation of the blood, and by thus imprisoning it in the smallest cavity. The blood so confined, coagulates, and fills the space between the tampon and the bleeding surface with a fibrinous clot, which also closes the mouths of the vessels. When plugging is skilfully performed, the relief is temporarily perfect, and gives us valuable time for other treatment, or allows the cyclical period to pass, when the hyperæmia subsides. The *chemical* means consist in the use of powerful hæmostatics. By their chemical action upon the solid constituents of the blood, they produce a much firmer coagulum than results from mere stasis, and, if applied to the ruptured vessels, seal them up with coagulated plastic material, while if further away the coagulum forms a chemical tampon which opposes the flow toward the vulva. Used with the mechanical tampon they may be made to fill the interstices of the material of which it is formed, and thus solidify the whole mass.

In the greater number of dangerous cases of the kind of uterine hæmorrhage, the mouth of the womb is sufficiently patent to permit the introduction of the plugging material saturated with a hæmostatic preparation into the cavity of the uterus. Dr. Sims's method of preparing the material and performing the operation of plugging the womb is admirable in its simplicity and efficiency. The substance used is the finest article of cotton-wool, saturated with a liquid composed of one part of the strong solution of the subsulphate of iron and two of water. After the cotton has been perfectly saturated, it is deprived of the major part of its fluid by pressure, and is then allowed to dry until ready for use. The application is made by wrapping a sufficient quantity of the dried iron-cotton around a long, small piece of whalebone, and introducing it into the cavity of the uterus, when the cotton is detached and left there. If the hæmorrhage is comparatively moderate, one of these pieces may be sufficient; if severe, it will be necessary to stuff the uterine cavity full. This can be best accomplished by having the patient placed on her side, and the uterus exposed by Sims's speculum. To facilitate the removal of this ferruginous tampon, the suggestion of Dr. J. R. Chadwick, of Boston, is, I think, a valuable one, viz., to wrap strong thread loosely around the cotton as it surrounds the whalebone. I prefer this method of using the hæmostatic to its injection, because the shock from the application is much less.

If the mouth and cervical cavity of the womb are not sufficiently open to permit of the introduction of this hæmostatic preparation, we may plug the cervix with prepared sponge. The first sponge should be pushed through the cervix into the cavity, and up to the fundus uteri, so that when it expands its upper end may possibly reach and press upon the bleeding point. If large enough, the cervical cavity will be completely filled and the bleeding effectually checked. The sponge should be carbolized, and well secured, before it is introduced, by passing a strong piece of twine through it, from one end to the other. Neither the cotton nor sponge should be allowed to remain longer than twenty-four hours, and half of that time is usually long enough. After removal, the vagina may be cleansed, and the application repeated if necessary. I have sometimes been obliged to renew the sponge tampon several times in the same case, though this is not usually required.

If these means are not at hand, or if the case is not sufficiently urgent to require plugging of the uterus, we may resort to the vaginal tampon. This may be made of cotton, of which pieces as large as pullet's eggs may be used, rolled somewhat solidly, and each secured with thread and lubricated with oil or lard. A sufficient number to perfectly fill the vagina should be prepared. The patient should be placed on her left side, with the limbs flexed, and the upper one thrown forward over the other. The operator, standing at the back of the patient, inserts into the vagina two fingers of the left hand, with which he draws the perinæum well backward. This will open the canal so that the clots may be easily removed with the fingers, when, with the right hand, the cotton may be placed with great facility in the vagina. At first several on the os and around it, and then the whole vagina may be packed solidly under the eye of the operator. If Sims's speculum be at hand, it should be used instead of the two fingers to hold back the perinæum.

Or we may vary this according to the process described by Dr. Thomas in the *American Journal of the Medical Sciences* for July, 1876, page 147. After dilating the vagina, "pieces of cotton, soaked in water, pressed and flattened out by the fingers, each about the size of a very small biscuit, are pressed into the vaginal cul-de-sac by means of forceps till this is filled. Then other pieces are packed firmly around the cervix until only the os is visible; a smaller pad is then pressed firmly against or introduced within the cervical canal, and the whole vagina is then filled to its lowest portion." An ordinary surgeon's roller answers admirably for a plug, and may be introduced by first inserting one end, and then passing it up in short folds until enough has been placed in the vaginal cavity to fill it up compactly. In most cases, where we desire to leave the patient, the tampon should be retained by a compress and "T" bandage.

When we have reason to anticipate a sudden occurrence of severe hæmorrhage in our absence, we may instruct the patient or nurse how to make and apply a very safe vaginal plug. A sponge, large enough to fill the vagina closely, may be prepared by wetting it in a strong solution of alum, or in a weak solution of subsulphate of iron, passing a piece of strong twine or tape through the centre, and then wrapping it with tape in an elongated shape to its smallest dimensions. It may then be laid aside to dry. When the necessity for its use arises the tape is removed, and the sponge thus compressed may be passed without any resistance entirely into the vagina. It is soon expanded by the blood, and the vaginal cavity thoroughly filled. A few of these sponges prepared ready for instant use will enable the patient to prevent any material loss until the practitioner arrives. The plug may be removed by the tape or twine whenever desired. The plug may be allowed to remain from eighteen to twenty-four hours, when it should be withdrawn, and the vagina having been thoroughly cleansed with carbolized water, replaced if necessary.

Curative Treatment.

The central nervous disorders which cause uterine hæmorrhage will, when recognized, require the treatment set forth in the various works upon these subjects. I need not, therefore, dwell here upon the management of the spinal and cerebral inflammations and irritations, nor upon the numerous forms of emotional excitement which lead to metrorrhagia. The treatment of the reflex, morbid, nervous influences belongs more particularly to gynæcology, and will call for all the ingenuity and varied knowledge taught in that branch of practical medicine. The ovarian derangements, being the more obvious and common of these may be noticed first. Our means for replacing and retaining in position displaced ovaries are very meagre. The patient must be confined to the horizontal position, with the pelvis elevated as much as practicable. The knee-chest position is the best, and may often be maintained for a considerable part of the twenty-four hours. Generally the displacement is accompanied by congestion or inflammation of the ovary, which increases its size and weight. When this is the case, the treatment, in addition to position and quietude, recommended during the intermenstrual period, will consist in the use of counter-irritants, hip-baths, hot-water vaginal injections, and alteratives, administered internally, or applied externally in the form of ointments, or per vaginam as suppositories, injections, etc. Among the alteratives, the muriate of ammonia will be found very valuable. When there is much debility, the bichloride of mercury, dissolved in the compound tincture of cinchona, is among the very best. Iodine, iodide of potassium, and iodide of iron should also be named as efficient alteratives in these conditions of the ovaries. One derivative measure which I desire to mention as especially beneficial in these cases is dry cupping over the sacrum, often repeated. To be effectual the cups should be large and allowed to remain for a long time, say an hour or more. When there is much pain in the ovarian regions, suppositories of the extract of belladonna and ergot, once or twice daily, will not only relieve the pain, but will do much towards allaying the inflammation.

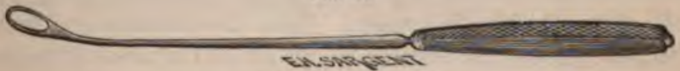
When hæmorrhage occurs in a nursing woman, if it is of sufficient gravity, the child should be weaned. At the time of the paroxysm, if the breasts are tumid and tender, cold may be applied to them to relieve both the uterine hæmorrhage and the mammary congestion. These patients require invigorating measures in connection with the local treatment of the breasts.

The vesical or rectal tenesmus which gives rise to hæmorrhage must be treated by the remedies found necessary after investigating the cause. So, also, with diseases of the stomach, bowels, and liver, as well as with the effect of cold or of long-continued heat.

Subinvolution and chronic congestion of the whole uterus require to be treated very much alike, by the application of such remedies as condense the uterine tissues,—ergot, belladonna, quinia, electricity, cold injections, compresses, and sitz-baths. When there is no tenderness, ergot will be found a very efficient remedy, if administered for a sufficient length of time—several months, for instance. If there is considerable tenderness and pain, belladonna and quinia will be best adapted to the case. Ergot in some instances induces sensitiveness and heat in the pelvic organs, and then it should be used very cautiously. This effect of ergot is especially noticeable when there is chronic local peritonitis or cellulitis. If there is a high degree of sensitiveness, a mercurial alterative may very properly be given in connection with the belladonna and quinia, and a good form for administering it is the bichloride of mercury dissolved in the compound tincture of cinchona; or we may use mercurial inunction, or mercury in suppositories. I have not been able to do much good in these cases with iodine in any form. If given with iron, as the iodide of iron, it has occasionally a good tonic and alterative influence. These conditions of the uterus are very obstinate, and require a continuous treatment, oftentimes for many months.

The treatment of endometritis, described elsewhere, consists mainly in a persevering continuance of stimulating applications to the diseased mucous membrane. I do not like the term caustic, for even the strongest remedies used for this purpose are applied so sparingly that their effects are little more than strongly stimulative. In the light of our present knowledge of the processes of menstruation, these remedies, as suggested by Dr. Atthill, should be resorted to immediately after the monthly flow has ceased. By common consent of the profession, in this country, the treatment of granulations of the uterine mucous membrane consists in scraping them off. If the mouth of the uterus is sufficiently patent to admit a small-sized curette, the scraping may be done effectually without dilatation; if not, a cupelo or sea-tangle tent may precede it.

FIG. 38.



The Dull Curette.

The curette should be passed over every point in the uterine cavity with firmness enough to detach the soft excrescences, and yet there should not be force enough employed to wound the natural tissue. Success will generally be announced by the discharge of the soft elongated growths. These are sometimes very abundant. The scraping should be done during the flow. It is not necessary to wait for a protracted paroxysm to pass by.

Although not curative, the same treatment may be mentioned as most efficacious in arresting the hæmorrhages resulting from cancerous granulations. In a discussion of Dr. Hanks's recent paper, Dr. Peaslee gives the very judicious advice not to cut into the sound tissue in the process. In cases of malignant fungus, we may often arrest the tendency to hæmorrhage by injecting alcohol, by means of a hypodermic syringe, deeply into the substance of the part. This process frequently repeated sometimes retards the growth very materially. The tincture of the chloride of iron, similarly used, will often have the same effect.

The various conditions which give rise to retardation of the venous circulation require to be treated according to the improved methods now so well understood by the profession. The displacements of the uterus, which are arranged among these conditions, must be corrected by the various ingenious appliances designed for this purpose. And this may be done during the time of the preternatural flow with the expectation of moderating it at once.

Dr. T. D. Fitch, of Chicago, has recently proven this last assertion in the management of a case occurring in a patient who had just passed the menopause. The uterus was retroverted, and all the means resorted to did not even moderate the metrorrhagia until the organ was elevated and retained in position by an appropriate pessary, when in a short time the bleeding ceased. After the subsidence of the flow, the patient removed the instrument, on account of some slight inconvenience which it gave her, but the flooding began again in a very few hours, and continued, notwithstanding repeated efforts to arrest it, until the pessary was once more introduced, when the hæmorrhage again subsided, and has not returned. The patient was still wearing the pessary when I heard of her case.

The extreme danger from hæmorrhage connected with fibrous tumors of the uterus is not so often encountered since the profession has become acquainted with the great influence exerted upon certain conditions of the unimpregnated uterus by ergot. It is now understood that fully seventy-five per cent. of hæmorrhagic cases of fibrous tumor of the uterus may be rendered free from danger, as far as the hæmorrhage is concerned, by an intelligent and persevering use of ergot, and that in twenty per cent. the tumors may be removed. In using ergot, in these cases, the mode of administering it cannot be uniform. Some patients cannot take it in any sufficient doses to answer the purpose; some cannot take it in the form of fluid extract, or wine, but can take the solid extract in the form of pills; others can take it in any form. When the stomach will not tolerate the ergot, it may be given hypodermically, or per rectum in suppositories, and I believe that it can be made to act efficiently when given in any of these ways.

Whatever method or form we may adopt in the administration of ergot, we should give it in sufficient quantities to produce a sensible effect by causing contractions and pain, and there is no better rule to guide us, so far as I can judge, than to give it in increasing doses until that result follows. Twenty minims of the fluid extract, three times a day, will sometimes be sufficient, while some patients, on the other hand, will require twice or three times as much to produce the effect.

The length of time required to obtain the ultimate effects of the ergot in these doses varies as much as the quantity required. The tumor will sometimes diminish very rapidly, but generally the decrease in size is quite slow. From one month to over a year may be required to accomplish a cure when it can be accomplished at all. Ergot is sometimes very violent in its action, but by withdrawing it temporarily, lessening the dose, or combining and alternating it with anodynes, it may be safely managed. Although I have given it extensively, and for a long time together, I have not seen anything worse than inconvenience arising from its use.

CHAPTER VIII.

DYSMENORRHŒA.

THIS is a general term for painful and difficult menstruation, and includes conditions widely different in their nature. In some cases no appreciable morbid changes are discoverable in the organs which seem to be the seat of pain, either during or between the times of the menstrual flow, and these are called neuralgic dysmenorrhœa.

They depend upon a general state of the system, which is supposed by some to be rheumatic and by others purely neuralgic. It would be difficult to define with any accuracy either of these conditions, the rheumatic or the neuralgic diathesis, and yet we know enough about their manifestations to be able to detect their presence.

The character of the symptoms of this form of dysmenorrhœa is determined by the conditions of the system.

It generally occurs in patients who are manifestly subjects of one of these diatheses, and who in the intervals between the periods experience neuralgic symptoms, or symptoms referable to rheumatism.

These features of the cases are sometimes so marked as to be easily detected, while at other times they are not well defined. Whether there is some permanent morbid condition of the nervous apparatus of the pelvic organs that is perpetuated from month to month, and thus constitutes the disease, or whether in neuralgic patients the vascular and nervous disturbance of the menstrual period is sufficient to excite and localize the morbific energies of this diathesis, we do not know. I have been in the habit of teaching the latter. The paroxysm of suffering is more irregular with reference to the commencement of the flow than in any other form of dysmenorrhœa. More frequently than otherwise the pain begins one, two, or even three days before the time of the flow, and continues in a subdued degree during a great part of the time of the flow. It is sharp and paroxysmal, but not generally accompanied with tenesmus. The pains do not seem to be influenced much by the flow. The intensity of the symptoms vary from slight and very tolerable pains in some patients to the greatest agony in others.

This kind of dysmenorrhœa occurs in that class of patients of whom it is often said, "They suffer more than any one else from the same cause." They are very nervous patients. The seat of the pain is not always the same; sometimes it is referred to the uterus exclusively, but generally the pain radiates to the ovaries, the back, in the region of the genito-spinal centre, and down the limbs.

Diagnosis.

A physical examination of the pelvic organs enables us to declare that there is none of the morbid conditions we usually find in the other forms. This, with the diathetic manifestations, is the only means of arriving at definite conclusions.

Prognosis.

This affection, although it is obstinate and resists treatment of almost every kind, and is apt to return after it was supposed to be cured, yet the effects of judicious treatment upon it are quite marked.

Treatment.

Change of climate, scenery, and modes of living are among the most promising remedies. I have known patients to be entirely free from dysmenorrhœal paroxysms during a long tour in Europe, and others to be relieved by moving from a northern to a southern climate. There is probably no better way to produce a decidedly salutary and lasting effect upon the nervous system of these patients than to revolutionize their surroundings by change of climate. A summer residence by the seaside, the bathing and exercise connected with it will often suffice to interrupt, if not cure, the recurrence of these paroxysms.

If we cannot remove the patient from the circumstances under which her disease originated, we may do a great deal to get rid of the diathesis by outdoor exercise on horseback, or on foot, and, if neither of these is possible, in a carriage.

The diet should be regulated with a view to an exalted state of nutrition. Medicines may also be made to exercise a powerful influence upon the diathetic condition.

In cases where we can trace a rheumatic taint we should give medicines with a view to relieve it; among which are Dewees's tincture of guaiac. in drachm doses, three or four times a day, the tincture of asclepias tuberosa, or viburnum prunifolium. In the more purely neuralgic cases, tonics containing iron, strychnia, quinine, and phosphorus are serviceable. The phosphide of zinc or the oxide of zinc will also be found very useful remedies for this general condition.

The manner of treatment of the paroxysm is also of great importance. As we can calculate with some definiteness the time when the paroxysm will come, we may anticipate it with such remedies as will produce a strong impression on the nervous system.

The late Dr. M. B. Wright taught his students that large doses of quinine given one or two days before the expected paroxysm, with a view to having the patient pass into it in a state of cinchonism, often mitigated her sufferings very greatly, and sometimes entirely prevented it. If, as he supposed, many cases were due to malarial influences we might expect great good from this treatment. Arsenic is another remedy that will sometimes mitigate the suffering if given so as to exert its full influence at the time of the paroxysm. To do this its administration must be commenced at least a week before the return, and continued from small to increasing doses until characteristic effects appear. In giving remedies for the relief of pain during the paroxysms we should have in mind that patients afflicted with this form of dysmenorrhœa are easily fascinated with the effects of anodynes and give them up with great reluctance, and that there is therefore great danger of making opium-eaters of them.

I could point out a number of patients who have abused the prescriptions given them for this purpose to their great sorrow.

We should feel a proper sense of responsibility in these cases, use anodynes as sparingly as possible, and place them beyond the reach of the patient when the urgency of the symptoms has passed. Chloral, chloroform, and morphia are the anodynes upon which we will be obliged to rely in the extreme agony of a paroxysm.

The Inflammatory Form of Dysmenorrhœa.

In this variety of dysmenorrhœa the condition giving rise to the paroxysm is inflammation in some of the pelvic organs, generally the uterus, the ovaries, or both. Whether there is a pure ovarian dysmenorrhœa of this nature or not, I am not prepared to positively assert, but I think it very probable that there is. In most cases of inflammatory dysmenorrhœa, however, I believe the morbid condition exists in both the ovaries and uterus. In exceptional instances the inflammation may be located in the cellular tissue, and perhaps in other pelvic structures.

Symptoms.

Patients laboring under this form of the affection are generally the subjects of intramenstrual symptoms of sufficient intensity to mark the nature of the causing conditions. They are the usual symptoms of uterine or ovarian disease. It is in this form that intramenstrual paroxysms occur midway between the menstrual periods. These intramenstrual paroxysms are sometimes very severe, but probably are not so intense as those occurring during the periods.

The paroxysms usually commence some hours, and, occasionally, a day or two before the flow, and partially or completely cease as soon as the flow is established and becomes free. The pain is generally of a somewhat steady aching character, not so intense, but more continuous than the neuralgic form. The paroxysm is usually attended with febrile phenomena. Sometimes there is a sharp attack of fever, preceded by chilliness, and accompanied with furred tongue, headache, and pain in the limbs. The pain is not always confined to the pelvis, but radiates upward and downward. The paroxysm is usually accounted for by supposing that the pain due to the existing inflammation is very much aggravated by the hyperæmia and hyperæsthesia attendant upon the occurrence of menstruation. However this may be, they are distinguished by this similarity to the pains of inflammation.

Diagnosis.

A thorough physical examination, for which I will refer the reader to the diagnosis of uterine disease, will enable us to discover the locality, character, and grade of the morbid process.

Prognosis.

The prognosis of this form of dysmenorrhœa I believe to be more favorable than any of the others, because more amenable to treatment. It does not cause that intensity of suffering which we witness in some of the other varieties.

It may not be irrelevant to state here that while we do meet with pure examples of neuralgic and inflammatory dysmenorrhœa there is often an obvious neuralgic element in the inflammatory form—a complication of the two varieties. Sometimes one of these morbid conditions predominates, and sometimes the other.

Treatment.

For the special treatment of the inflammation as the controlling element in this affection I must refer the reader to the methods of treatment elsewhere given. The progress of the cure of that element will be marked by the subsidence of the intensity of the paroxysms until they fail to return.

In this form we may often anticipate the paroxysms, and allay them by appropriate treatment. The patient should be directed to take her bed before it comes on, and remain quiet until the paroxysm is over. Particular attention should be directed to her bowels, and it will often be best to give her a small mercurial—two or three grains of calomel, and follow it in seven or eight hours by a saline cathartic. After this diaphoresis should be encouraged by the acetate of potash, and, as the pains begin, Dover's powder. The anticipatory local treatment consists in bloodletting by leeches or scarification the day before the expected paroxysm. Hot-water injections, continued through the attack as often as three or four times in twenty-four hours, hot fomentations over the hypogastrium, and tepid sitz-baths. These will often do away with the necessity of using anodynes. When the pain is not relieved by these measures anodynes in sufficient quantities to mitigate it are permissible.

Membranous Dysmenorrhœa.

The particular feature of this form of dysmenorrhœa is the discharge of a membranous cast of the cavity of the uterus. Sometimes the membrane comes away without losing its shape or integrity; very much more frequently it is discharged in a broken condition, and appears in shreds or large pieces, representing in shape and size the anterior or posterior wall of the cavity of the uterus.

"The microscope shows that the discharges at times consist simply of fibrinous clots, which are with difficulty passed through the os uteri, when it is very small, as is frequently the case in females who have never borne children; at other times the fibrin is in a fibrillated state, inclosing in its reticulum numerous lymph and epithelial cells. In other cases there are found irregular shreds, containing capillary vessels with embryonic walls, in the midst of connective tissue, infiltrated with lymph-cells. There are also frequently seen fragments of uterine glands. This is a genuine discharge of exfoliated mucous membrane. The mucous membrane may be expelled entire; this, however, is not of frequent occurrence."*

Numerous theories have been propagated to explain the formation of this membrane. It would seem that the ideas prevailing with reference to the formation of the deciduous membrane have influenced the profession in their opinions as to the conditions giving rise to this membranous formation.

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* Cornil and Ranvier's Pathological Histology, translated by Shakespeare and Simes, p. 685.

In the theory adopted by Dewees, Montgomery, and others, that it was a layer of plastic lymph spread upon the uterine wall, we see something of the Hunterian explanation of the formation of the decidua. In another theory, advanced by Oldham and others, we see the results of the researches of Coste, who considers the decidua nothing more than the mucous membrane of the uterus, changed by impregnation. According to this theory it is the menstrual decidua which does not undergo disintegration as completely as in health; in other words the membrane is the result of hypernidation. In the natural condition of the uterus the mucous membrane undergoes changes that render it suitable to become the nidus for and to embrace and fix the ovum in its development. When conception does not take place the disintegration of the membrane and the flow are contemporaneous. If the membrane is overdeveloped by reason of a preternatural amount of connective tissue, then the membrane retains its integrity to a certain degree, and instead of flowing out as debris it is expelled as a whole or in large shreds.

I believe with Scanzoni that the uterus in which the formation of this membrane occurs is in a state of hyperæmia. Sometimes this hyperæmia is trophic, and then the membrane will contain capillary bloodvessels and utricular glands, while in others it is inflammatory, and the discharge will contain fibrinous clots and false or fibrinous membrane, inclosing in its reticulum lymph and epithelial cells.

This view of the subject will enable us to explain the microscopic appearances noticed in different cases. Clinical observation will also sustain the position that inflammation is the main factor in a portion of these cases at least.

In the cases in which there is trophic hyperæmia, the initial or actuating condition is probably nervous, and the influence reflected through the ovaries, as in the production of normal menstrual congestion or the hyperæmia of pregnancy.

Symptoms.

The paroxysm is sometimes ushered in by nausea, vomiting, rapid pulse, furred tongue, headache, and increased temperature, and in many respects resembles inflammatory dysmenorrhœa; at other times there are no febrile symptoms; but in most cases of membranous dysmenorrhœa the stomach sympathizes with the pelvic trouble.

The pains usually begin after the commencement of the flow and continue until the membrane passes. They are at first sharp, and dart from the pelvis in every direction, afterward cramping, and finally tenesmic or expulsive. The pains have for their object the separation and expulsion of the membrane, and subside as soon as this is accomplished.

The more complete the formation of the membrane, the more urgent and painful the efforts to get rid of it. The most distressing part of the suffering depends upon the effort to overcome the resistance of the os uteri to the evacuation of the membrane.

Without this resistance it is uncertain whether there would be much pain, as I have known two cases in which the membrane was repeatedly evacuated without pain. In both cases the internal os uteri was patulous. I have never seen the membrane expelled by parous women.

Diagnosis.

This depends upon the discovery of the membrane either in pieces or as a whole. While my observation has not been sufficiently extensive to enable me to establish a rule even for my own guidance, I believe it will be found that in cases attended with febrile symptoms the membrane will be of a plasmic character wholly, and that in those unattended by these symptoms the membrane will partake more of the deciduous character.

The *prognosis* of membranous dysmenorrhœa is not very encouraging, as it is very difficult to overcome the disposition to the formation of the membrane.

Treatment.

The paroxysm of membranous dysmenorrhœa, especially the more febrile form, should be treated with a view to removing the obstruction. The cervix should be dilated by Hunter's or some other dilator as soon as the pains become severe and expulsive in character; this will generally very materially shorten the duration, as it facilitates the discharge of the membrane. In connection with the dilatation, or without, an efficient dose of ergot will sometimes aid the process of expulsion very materially.

Sometimes we may prevent or mitigate the severity of a paroxysm by using a fasciculus of slippery elm tents a day or two before it occurs, especially in the febrile form.

If the paroxysm is attended with vomiting and fever, we should anticipate it by giving a cathartic the day before its occurrence and administer large doses of quinine.

The administration of ergot between the paroxysms in the trophic variety will aid very materially in overcoming the hyperæmic condition of the uterus, and produce a favorable influence upon the nerve-centres that preside over the process of ovulation. Mercurial and iodine alteratives should take its place in the inflammatory variety. The ammoniated tincture of guaiac. may be given with great propriety when a rheumatic diathesis is suspected. The local treatment of the two is very nearly the same, viz., dilatation and applications to the mucous membrane of the cavity of the body of the uterus, as in cases of chronic inflammation and congestion of that organ.

Obstructive Dysmenorrhœa.

The clinical study of dysmenorrhœa will force upon the observer the conviction that, in the majority of cases, this symptom is the result of uterine contractions, and that the contractions are efforts made by the uterus to expel its contents.

As I have already shown, this is the case in the membranous variety, the real cause of the expulsive pains being obstruction, not because there is contraction of the os uteri or cervical canal, but because the substance expelled required more room for its passage than was affordeed by the os of normal size.

In the inflammatory variety the same kind of pains are often noticed. Doubtless the cause of the expulsive efforts in this variety is the temporary stenosis of the internal os uteri, caused by the tumefaction of the mucous membrane at that point at the time of the menstrual congestion. This explanation presupposes endometritis with the greatest intensity of the inflammation at that point. Between the menstrual periods the tumefaction subsides, and the os presents no evidence of stenosis. This is one form of temporary stenosis causing dysmenorrhœa. Another is spasm of the circular fibres surrounding the internal os uteri at the time of menstruation.

We are prepared to understand how this may take place in patients of irritable fibre, when we remember the hyperæsthesia that accompanies chronic inflammation of the uterus and the congestion preceding the eruption of the menstrual discharge.

I have no doubt that the cause of temporary stenosis, even in the inflammatory form, is often spasmodic closure, as blepharospasm is caused by conjunctival inflammation.

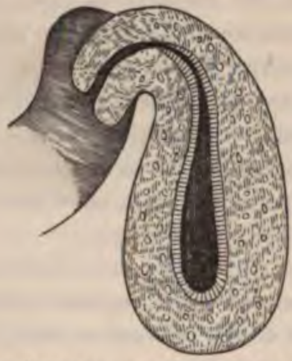
I think this spasmodic action is much more likely to occur in the inflammatory than in the neuralgic variety. There is one condition in which the expulsive pains of dysmenorrhœa manifest themselves with great severity where no stenosis exists. When there is a great degree of retroversion or retroflexion the cavity of the body is lower than the internal os uteri.

In such cases the extravasated blood, instead of flowing toward the mouth of the uterus, gravitates into the fundal portion of the cavity and there accumulates until its presence excites uterine contractions.

It would seem from these considerations that much of the suffering connected with retroflexion, and even anteflexion, with or without stenosis, is fairly attributable to the gravitation of the blood into instead of out of the uterus.

I would call attention to the figure of retroflexion, here introduced, to demonstrate this proposition: Would it be possible, even if there was no stenosis, for the blood to flow out of a uterus in the position there represented? And would not the accumulation of the blood in the dependent cavity, and perhaps coagulating there, as certainly produce efforts at expulsion as any other foreign body? Since my attention has been directed, especially to this item, in the pathology of dysmenorrhœa, I have been convinced that too much importance has been attached to simple stenosis.

FIG. 39.



Strong Retroflexion favoring Gravitation to the Fundus.

Nearly all cases of obstructive dysmenorrhœa are associated with displacement or flexional deformity of the uterus. When gravity favors the outflow of the menstrual blood it requires only a very small passage through which to escape. I have repeatedly examined patients, in whom the external os uteri was not larger than a pinhole, whose menstrual flow was easy and copious. While thus expressing myself with reference to the importance of malposition and flexional deformity of the uterus as offering a sufficient impediment to the discharge of the blood to induce the most distressing form of dysmenorrhœa, I would not ignore stenosis as one of the causes of it.

Any cause that will give rise to retention of the menstrual flow will cause uterine contractions and pain. A typical case, in which dysmenorrhœal symptoms from forcible retention of the menstrual fluid are manifested, is congenital occlusion of some portion of the genital canal. If the obstruction is at the orifice of the vagina, the pains will not be of this character until the vagina is filled and a portion of the blood is retained in the uterus; but if the occlusion is at the uterus, the symptoms will begin with the first menstrual effort. To witness a case of this kind will convince the observer that obstruction to the flow will give rise to dysmenorrhœal symptoms. If there is a great degree of stenosis in a part of the genital canal symptoms of a similar character will occur.

Symptoms.

The main symptom of obstructive or retentive dysmenorrhœa is excruciating pain of an expulsive character. The pains are compared to colic, and the term uterine colic is quite appropriate.

They generally come on before the commencement of the flow, and continue until the discharge is well established, when they gradually subside, and the flow continues from that time on without pain. In many instances the great congestion accompanying the effort at discharge, causing a sort of erection of the uterus, not only overcomes the stenosis, but it temporarily, to a great extent, corrects the position or deformity; without this correction the relief would not be complete. If the attendant will take the trouble to examine patients carefully during the flow—which by the way is very seldom done—he can easily convince himself of the truth of this statement.

Diagnosis.

The diagnosis may be established by physical examination. Obstruction of the vaginal orifice by the hymen, morbid adhesions, or congenital deformity may be detected by ocular, digital, and instrumental examination with the sound during the presence of the symptoms. Malposition or flexions will be detected by physical examination.

Prognosis.

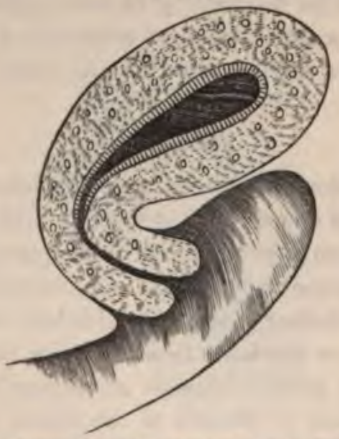
Like the other forms of dysmenorrhœa, the obstructive variety is apt to be very obstinate and difficult to manage satisfactorily; but as the corrective treatment is almost wholly mechanical or surgical, we may hope for good results.

Treatment.

In cases where there is retroflexion with dependent fundus, the first and most important corrective measure is to elevate the organ so that the blood will flow into the cervix, and thus escape from the os uteri.

This may be done before or at the time of the paroxysm. If we see the patient for the first time during a paroxysm, we should place her in the knee-chest position, and lift the fundus uteri up with one finger. By this means we straighten out the cervix, and thus dilate the contractions and give the blood an inclined plane over which to flow and escape.

FIG. 40.



Retroflexed Uterus with the Fundus raised by a Pessary.

This I am assured from repeated observation will often relieve a paroxysm. If this is not sufficient, with the patient still in the genu-pectoral position, we should introduce a sound to the fundus. In some cases elevating the womb, with or without the introduction of the sound, will relieve the patient for a few hours only; but if the pain returns, it may be relieved in the same way until the paroxysm subsides. Between the paroxysms a suitable retroversion pessary should be worn, and, if properly placed and watched, will go a great way toward effecting a cure.

When there is stenosis, we may often relieve the paroxysm by dilating the contracted point with a slippery-elm tent.

There are two principal methods of relieving stenosis, viz.: 1st. By incision. 2d. By dilatation or stretching the parts, by instruments made for the purpose, and tents.

Dr. Sims in his work on *Uterine Surgery* propounds the following opinions as to the causes of dysmenorrhœa, and bases his treatment on them. He says (page 142):

> "It (dysmenorrhœa) is only a symptom of disease, which may be caused by inflammation of the cervical mucous membrane, retroflexion, anteflexion, fibroid tumor in one wall of the uterus or the other, contraction of the os externum, flexures of the canal of the cervix, either acute or greatly curved, either at the os internum, at the insertion of the vagina, or extending throughout the whole length of the canal, all of which are but so many mechanical causes of obstruction which must be recognized and remedied if we expect to cure the dysmenorrhœa."

The following table is on page 132:

Of 100 cases of painful menstruation, ...	os was normal in but . . .	6
	os was contracted in . . .	90
	cervix was flexed in . . .	61
	congested in	7
	there were polypi in . . .	2
Of 29 cases of excessively painful menstruation,	os was normal in	0
	os was contracted in . . .	26
	cervix was flexed in . . .	23
	had polypi in	2
	was congested in	1

This tabular testimony of 129 cases is a strong argument in favor of Dr. Sims's theory, that dysmenorrhœa is almost always caused by obstruction.

As I have given the opinion of Dr. Sims as to the causes of dysmenorrhœa, I cannot complete this article without giving the reader an idea of the mode of treatment found most successful by him, viz., that of dilating and strengthening the canal of the cervix. He exposes the mouth of the uterus by placing the patient in the same position, and using the same instrument as for vesico-vaginal fistula. With a tenaculum he seizes and firmly holds the cervix, and draws it into the most convenient position. If the cervix is not flexed but merely narrow, he introduces one blade of the scissors into the canal of the cervix far enough to divide it on one side up to the junction with the vagina, and then closes them. The other side of the cervix is divided to the same extent in like manner, then, by means of the knife represented in figure, he divides the cervix up as high as the internal os.

FIG. 41.

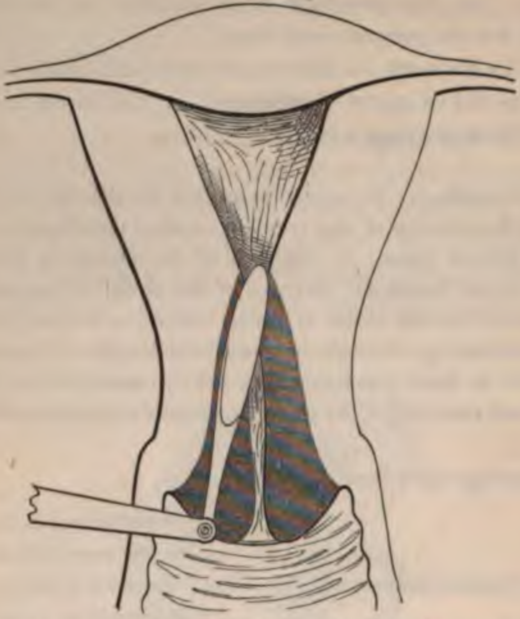
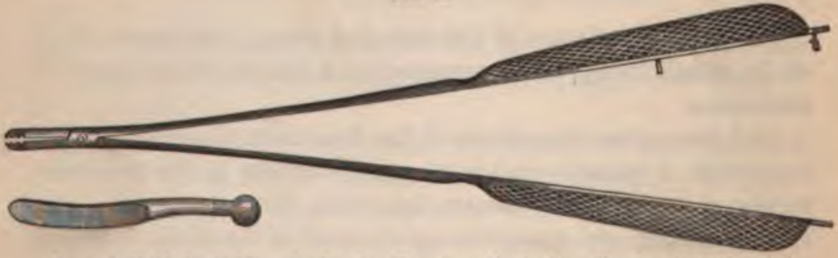


Fig. 41 represents the operation for dividing the straight cervix when too narrow. The dark part is the portion cut. On one side the knife is shown in the act of dividing the tissues. This is Dr. Sims's plan.

FIG. 42.

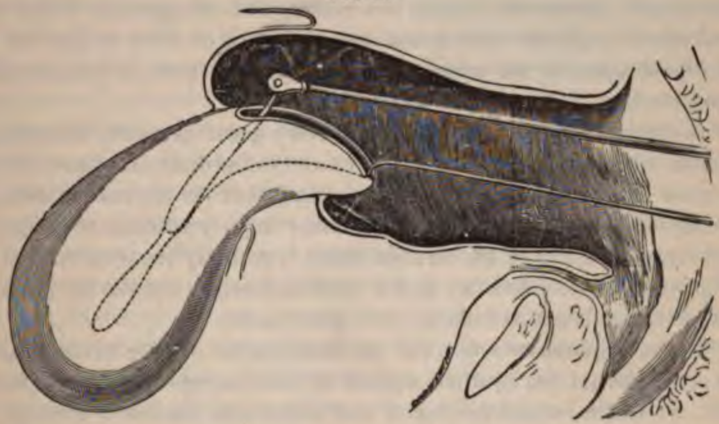


Emmet's Knife for dividing the Cervix. From a cut in the June Number, 1864, *New York Journal of Medicine.*

If the cervix is flexed, the lip of the uterus on the convex side is divided to the same height, and then the cervix opened with the knife. In this way the cervical canal is rendered rectilinear.

This is represented by Fig. 43, taken from page 169 of Dr. Sims's work on *Uterine Surgery*. It shows the posterior lip already divided by the scissors, the tenaculum fastened into the anterior lip, and the knife being inserted as high as necessary.

FIG. 43.



"The representation in the cut is taken from the perfected instrument made by Wade & Ford, of New York city. To their ingenuity is due the application of the principle. The representation is half the size of the instrument, but the blade at full size is out of proportion, as it should be represented both longer and narrower."

After having thus completed the operation Dr. Sims places in the wound of the lip of the cervix some cotton saturated with glycerin, and then proceeds to fill the vagina with cotton to guard against hæmorrhage, which he regards as always imminent. If there be but slight bleeding, it is not necessary to use more cotton than will keep the dressing in place. The patient should keep the recumbent posture for several days. The cotton in the vagina may be removed in twenty-four hours after the operation; that in the wound remains from two to three days. Dr. Emmet recommends that the sound be passed through the cervix every other day until the discharge ceases to prevent the parts from adhering. The sound need not be used for this purpose until the tampon is dispensed with.

The following are the conclusions in practice of the late Dr. E. R. Peaslee:*

"From the preceding facts I deduce the following conclusions:

"I. The deep incision of the cervix throughout, and complete bilateral discission of the vaginal portion with deep incision above, are alike frequently attended by certain immediate dangers, and not seldom productive of certain serious remote consequences, viz., profuse and sometimes fatal hæmorrhage, pelvic cellulitis, septic peritonitis (usually fatal), sterility, if not previously existing, and a tendency to miscarriage.

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* A paper read before the New York Academy of Medicine, 1876.

"II. Those risks and effects are all due to the extensive division of the walls of the cervix, and to the consequent enlargement of the cervical canal; and the sole compensation for all of them which can be calculated upon is the relief, and very often the cure, of stenotic dysmenorrhœa.

"It therefore becomes a question of very great practical importance whether the amount of cutting may not be so far diminished as to avoid all these risks, and at the same time be sufficient for the cure of stenotic sterility and dysmenorrhœa. But another inquiry antecedent to this is, how large a calibre of the cervical canal is actually required for the relief of these two conditions; and a reply sufficiently definite for all practical purposes is not so difficult as might appear.

"In the *imparous* woman, the narrowest point of the cervical canal, viz., the internal os, is, when opened by the passage of the menstrual fluid, an ellipse, whose conjugate and transverse diameters average respectively one-sixth and one-eighth of an inch; its area corresponding very nearly* with that of a circle one-seventh of an inch in diameter. The external os, also elliptical when moderately dilated, has diameters averaging one-fourth and one-sixth of an inch. It thus has an area exactly twice that of the internal os, and equalling that of a circle one-fifth inch in diameter.† The larger size of the external os doubtless has a special reference to conception, and favors the entrance of the spermatic fluid into the cervical canal. It has no special influence against dysmenorrhœa, since the menstrual fluid, after having passed through the internal os into the cervical canal, would pass just as easily from the latter through an opening of the same dimensions into the vagina. Hence, we not very seldom see imparous women with the external os no larger than a 'pin-hole,' and who, nevertheless, do not suffer from dysmenorrhœa, though, as a rule, they are sterile. But if the lining membrane of the canal becomes thicker from congestion, or some other cause, such patients suffer at once from stenosis at the external os.

"In the *parous* woman, the size of the external os varies within quite extensive limits, since it is exposed to so many of the accidents of parturition, while the internal os is more nearly uniform.

"I have deemed it desirable to ascertain the lowest average diameter of the two ora uteri in parous women, who are neither sterile nor have dysmenorrhœa, as a rational standard for determining the extent of incision actually required for the removal of these two conditions when stenotic. And, after a good deal of observation in this direction, I find that the inner os presents nearly twice the area of that of the imparous woman; in the majority of cases admitting a sound one-fifth of an inch in diameter, though, in a large minority, one from one-fifth to one-sixth of an inch only can be easily passed. I therefore regard a diameter of one-fifth of an inch as ample for the removal of sterility and dysmenorrhœa. I find the external os admits a dilator one-fifth of an inch in diameter and upward—in some cases as high as one-fourth or even three-tenths of an inch—but, as a rule, I think one-fourth of an inch sufficient for the purpose. It is of course to be understood that no narrowing of the canal exists between the two ora. Since, however, there may be some degree of stenosis for the menstrual fluid, while not for the sound, it is sometimes judicious (and especially if congestion of the cervical lining membrane coexists) to increase the dimensions just named, by the use of a dilator of the next larger size. I do not assert that the preceding dimensions are always required in the treatment of stenotic sterility and dysmenorrhœa, for they are not, nor that they are never to be exceeded, but that in almost all cases they will be found sufficient.

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* The circle is smaller than the ellipse, in the proportion of 144 to 147.

† Circle to ellipse as 72 to 75.

"Should this precise specification of dimensions seem too minute for practical purposes, we must remember that dimension cannot here have a less important relation to function than elsewhere; and that enlarging the internal os to the diameter of half an inch, as is often done by the deep incision, is, as has been seen, like permanently dilating the urethra (if it could be done) to the size of the small intestine. And the importance of making an incision of the internal os, with a precise intention and a precise knowledge of the mode of accomplishing what is intended, may be understood when I state that if the circle representing its area in the imparous woman be increased equivalently to surrounding it by a ring only one thirty-fifth of an inch wide, its area is increased as forty-nine to twenty-five, or almost exactly doubled. Or if an incision be made on each side of it to the extent of half a line (one twenty-fourth of an inch), and it then be dilated to a circle, it is increased two and a half times. And if the cut should extend one line to the right and the left, or the added ring were one-twelfth of an inch wide, the area would be increased more than four times and a half. This last increase is far more, in my experience, than is ever required in stenotic sterility and dysmenorrhœa.

Superficial Trachelotomy—My own Operation.

"III. Desiring to restrict the operation of trachelotomy in the treatment of stenotic sterility and dysmenorrhœa within the limits actually required, I, some ten years ago, devised and brought before the New

York Obstetrical Society* a series of five steel cervical dilators, to be used instead of incision, where the stenosis is slight and the cervix is normally soft and pliable. These, in shape and size, have a precise reference to the dimensions of the cervical canal, and especially of the two ora uteri, as already specified; and each is guarded by a bulb, so as to project through the internal os into the uterine cavity only about one-quarter of an inch.

"But finding that almost all cases of stenosis of the cervical canal are relieved more promptly, more permanently, and also with less pain, by incision, or this together with dilatation, than by any form of dilatation alone, I next endeavored to restrict the extent of the incision within the absolutely necessary limits, having determined them approximately by the preceding facts and calculations. To this end I devised a new method, and an instrument for executing it, which I also laid before the New York Obstetrical Society about eight years since; but the former was so simple, bloodless, and unpretending, in comparison with the procedures of Simpson and Sims, that it excited but little interest. Meanwhile, however, it has been sufficiently tested, I think, by myself and my pupils in different parts of the country, to entitle it to a more general notice.

"Since the superficial incision, as suggested by myself, has for its direct object merely the removal of stenosis of the cervical canal, and is therefore proposed for the treatment of stenotic dysmenorrhœa and sterility only, it is previously to be decided whether stenosis actually exists. And the following propositions will aid in settling this question, it being understood that the exploration is to be made at least four days after, and at least three days before, the catamenial flow.

A. *Respecting Stenosis of the Internal Os.*

"1. If a sound one-fifth of an inch in diameter passes easily through the cervical canal, there is no stenosis at the internal os, and no incision is there required. This is the size, therefore, of my large sound.

"2. If a sound one-sixth of an inch in diameter be easily passed, as above, there is no absolute, though there may be relative stenosis of the internal os; *i. e.*, there may be stenosis for the passage of a fluid, though not of the sound; and an incision to make it one-fifth of an inch may be required, but not unless the symptoms indicate it.

"3. If the sound easily passed be but one-seventh of an inch in diameter, and there are no symptoms of stenosis, no incision of the internal os is required. This is the normal size in the imparous woman, and the average size of Simpson's sound.

"4. If a sound but one-eighth of an inch in diameter cannot be passed through the internal os, there is either stenosis or, what is very much more probable, one of the flexions. Prove, therefore, that there is no flexion in this and every case in which a sound of any size does not traverse the internal os before operating for stenosis. I consider an internal os of one-eighth of an inch or less to be stenotic. Chrobak's highest limit for stenosis of the internal os is one-tenth of an inch (two and a half millimeters).

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* Also described in the New York Medical Journal, July, 1870, p. 478.

B. *Respecting Stenosis of the External Os.*

"5. On the other hand, there is no stenosis of the *external os* if a sound one-fifth of an inch in diameter easily traverses it. If there be congestion of the lining membrane, however, there may be stenosis, practically, in respect to conception; and the operation somewhat enlarging it (to one-quarter of an inch or more) may be required.

"6. If the external os will not easily admit a sound one-sixth of an inch in diameter, there is probably stenosis in respect to conception, and the operation is required. If not more than one-seventh of an inch, the operation will also probably be required for dysmenorrhœa.

"7. In case of operation, the whole cervical canal must be made still to retain the normal fusiform shape as far as possible.

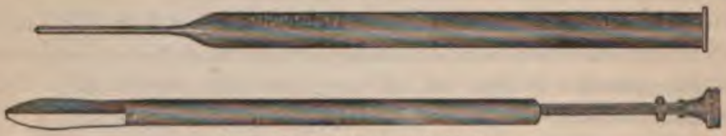
"I. My *method* consists in incising the internal os, if the stenosis exist at that part,—and the external, if at the latter,—to such an extent as to give to each its precise average dimensions in the parous woman, neither more nor less, and, of course, also overcoming any other point of stenosis existing anywhere else in the cervical canal. In cases complicated with congestion, however, I have shown that a slightly larger opening may be required, and, therefore, that the limits may extend beyond one-fifth of an inch to nearly a quarter of an inch in the case of the internal os, and to three-tenths of an inch, and possibly more, of the external.

"I do not, therefore, incise the internal or the external os to a given depth in all cases, but, taking them as I find them, cut just enough to give them their average normal size in the parous uterus. This is seldom one-half of a line and often not more than one-third of a line for the internal os, and not more than a line for the external. But, of course, there is far more variation in the latter. If the internal os admits a sound of but one-eighth of an inch in diameter, a cut on each side of nearly half a line (but three-eightieths of an inch) is required; and if but one-tenth of an inch in diameter, it must be one-twentieth of an inch deep on each side. The incisions are of precisely the same depth on each of the two sides.

"Since the lining membrane at the internal os is at most one twenty-fifth of an inch thick, it is seen that I generally do not cut nearly through it. Indeed, when the os is but one-eighth of an inch wide, I cut almost through the membrane; and when one-tenth of an inch, I divide it and one-hundredth of an inch of the tissue beneath it.*

"II. The *instrument* devised to secure this effect consists of a flattened tube, containing a blade. The former is eight inches long and seven-sixteenths of an inch wide, except its terminal one inch and three-quarters, which has a width of but one-eighth of an inch, as shown in Fig. 44. This portion is made curved by some instrument-makers, which is not an improvement. The blade is of such a width as to slide accurately within the tube, having a nut and a screw attached to its proximal extremity to gauge the extent of its passage into the cervical canal, and a blunt point and lateral cutting edges for an inch and five-eighths at the distal end. There are two blades for each instrument, the cutting portion of one being a quarter of an inch wide, and of the other three-sixteenths of an inch. If the stenosis is confined to the internal os, the narrower blade alone is used. If both ora are contracted, the wider instrument is passed through the external os, and the other blade then introduced and the inner os incised by it; and in cases of decided congestion, the wider blade alone is sometimes used for both ora. In this case, a sound one-fifth of an inch in diameter is easily passed through the inner os; while, if the smaller blade had been used, considerable force would be required to carry it through.

FIG. 44.



Dr. Peaslee's Metrotome, half size.

"In hospital practice I place the patient upon the side, use the duck-bill speculum, hold the cervix by means of a uterine tenaculum, pass the tube into the canal up to the shoulder, and, therefore, one-quarter of an inch into the uterine cavity through the internal os, when the blade, previously gauged, is introduced into the tube and carried up the cervical canal as far as is required to overcome the stenosis. My large sound (No. 10, American scale), or, still better, the conical dilator of the proper size, is then passed up the canal, and the operation is completed. In private practice I generally place the patient on the back, and pass the tube into the cervical canal precisely as I would Simpson's sound, and then pass the blade through it, as just described.

"If the external os is too narrow for the admission of the extremity of my instrument, it may be enlarged by the introduction—generally one-eighth to one-quarter of an inch is far enough—of a narrow-pointed bistoury. I have not found the internal os too narrow to receive it, except in cases of flexion, or previous traumatic injury of the cervix.

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* The details of all the preceding calculations are properly omitted here, as a slight acquaintance with mathematics will enable the reader to verify them.

"The changes in the whole uterine cavity from this operation are shown by Fig. 46. Respecting its dangers I have but little to communicate. The hæmorrhage following it seldom exceeds one or two drachms, and never requires any special attention. The pain is very slight and momentary, and no anæsthetic is ever required. The medullary structure of the cervix never being cut into, pelvic cellulitis and peritonitis do not ensue. The only exceptions to this statement in nearly three hundred cases are: one case in private practice, in which some febrile reaction and uterine tenderness ensued, which subsided entirely, without cellulitis, in four days; and two cases, in the Woman's Hospital, of slight cellulitis. But both the latter were patients who were known to have had cellulitis a short time previously, and I was obliged, by some peculiar circumstances, to operate sooner than I otherwise would have done. The final results were precisely as desired in each of these three cases. Otherwise I have never had any unpleasant symptoms follow the operation; and the only precautions taken are to keep the patient two days, and sometimes three days, in bed, and not allow her to walk out under a week. I use the dilator every second day after the operation for a week, and two or three times more once a week. I have very often performed the operation at my office on residents of the city, and sent the patient home to bed after half an hour's rest, and have never had to regret it. I decline to operate within four days after or six days before the catamenial period.

"I claim for the method just described the following recommendations in the treatment of stenotic sterility and dysmenorrhœa:

"I. It aims to restore the normal dimensions as existing in the parous woman throughout the cervical canal, nothing more and nothing less, unless where a slight exaggeration of size is required on account of coexisting congestion.

"II. It effects this object definitely and with certainty, and with incisions exactly symmetrical, or equal on the two sides.

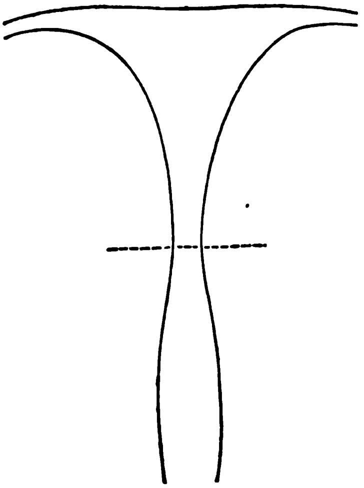
"III. It gives no danger from hæmorrhage, since the arteries nearest the internal os, if that is to be divided, are never reached, and the whole thickness of the lining membrane even is generally not divided; and there are no arteries within the portion divided at the external os.

"IV. There is no danger of pelvic cellulitis, except in those patients in whom the least operative interference with the cervix, or the use of the sound or of a sponge-tent, will produce it. I consider the operation less dangerous in this respect than the last mentioned.

"V. There is no danger of septic peritonitis, since the medullary substance is not reached by the incision.

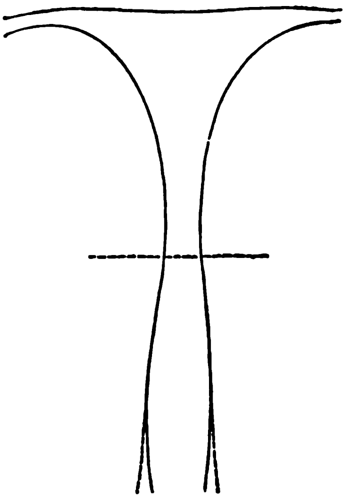
"VI. It does not produce sterility or tendency to abortion by mutilating the cervical canal. The changes it produces in the latter, as compared with those from the operations of Simpson and Sims, are shown by Figs. 45, 46, 47, and 48.

FIG. 45.



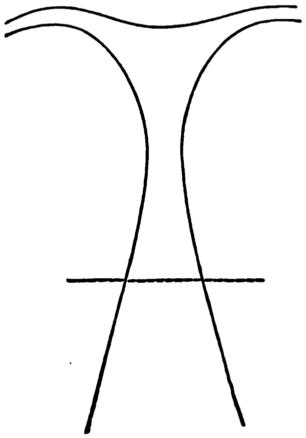
Normal Uterine Cavity.

FIG. 46.



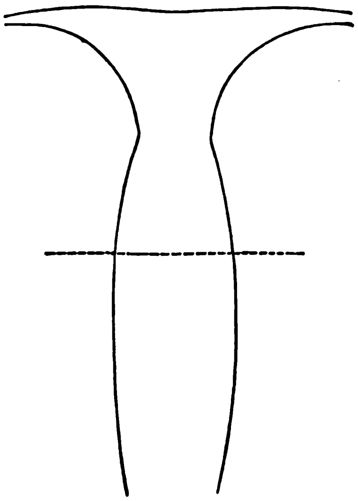
Ditto, as modified by Peaslee's Method.

FIG. 47.



Uterine Cavity after Sims's Operation.

FIG. 48.



Ditto, after Simpson's Operation.

"VIII. It removes stenosis perfectly, and in most cases permanently, since there is very little tendency to closure of the slight incision made.

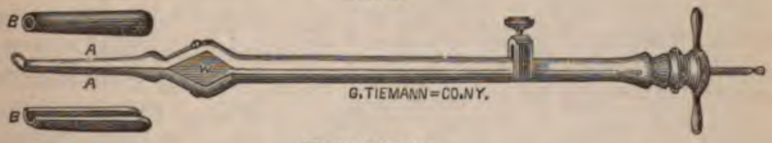
I have had to repeat the operation only twice in my practice, except in cases in which there was cicatricial tissue to be divided, as after imperfect and partial closure following rupture of the cervix in parturition, or ensuing after Simpson's or Sims's operations. Here the operation will usually have to be repeated in a year or two, unless pregnancy should occur, an event not to be expected in such cases, as we have seen.

"Finally, then, since my experience has shown that a diameter of one-fifth of an inch for the internal os, and of one-quarter to three-tenths of an inch for the external os, is sufficient in the treatment of stenotic sterility and dysmenorrhœa, I suggest the disuse of Simpson's and Sims's operations in the treatment of these conditions, and the substitution of a milder, safer, and more efficacious method, of which, perhaps, my own is, however, only the forerunner. At least, further experience in the line I have indicated will doubtless afford still more accurate conclusions."

Dilatation.

Dilatation, properly conducted, often accomplishes the removal of contractions by expansion, and straightens a flexed uterus sufficiently to render the flexion innoxious. It is done by instruments which can be introduced, closed, and, while in the cavity, opened so as to cause distension. Notable among these are Hunter's and Nelson's.

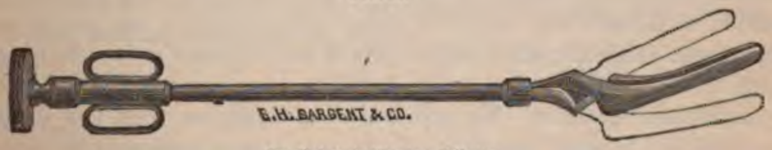
FIG. 49.



Hunter's Dilator.

When the obstruction is not very great these will frequently be sufficient, but if there is much constriction they should give place to other means which bear more uniformly on the whole inner circumference of the cavity. I doubt if much improvement has been made on those introduced by Dr. Mackintosh, fifty years ago. He employed metallic sounds of different sizes.

FIG. 50.



Dr. Nelson's Uterine Dilator.

His method of employing them was to introduce one large enough to produce some distension, let it remain a few moments, and then one a little larger, and in the same way succeed this by one still larger, until the dilatation is complete. This manner of dilating was repeated until the obstruction was removed. The introduction of the various forms of tents since the time of Mackintosh has diverted the attention of the profession from this very effective method of dilating the cervical canal. For the mode of using tents I would refer the reader to the subject Dilatation in another part of this work. Hank's hard-rubber dilators are elegant instruments, and may be used in the same manner as Mackintosh's. To use these dilators in the most effective manner the patient should be anæsthetized, placed in Sims's position, and the uterus exposed by his speculum.

In the *American Journal of Medical Science* for January, 1867, I find the following summary, which I present to the reader without apology:

"*Comparative Merits of Incision and Dilatation of the Mouth of the Womb in Cases of Dysmenorrhœa.*—Professor D. Humphreys Storer read a highly interesting paper on this subject before the Boston Society of Medical Improvement. The large experience and sound judgment of Professor Storer not only entitle his opinions to a respectful consideration, but his conclusions to entire confidence. He says: 'From a somewhat extensive employment of sponge-tents during the ten past years for the treatment of dysmenorrhœa and sterility, I have formed conclusions different from those of the gentlemen of whom I have spoken (Drs. Barnes, Baker Brown, Greenhalgh, and Sims). I have not unfrequently been disappointed in the result hoped for. The local obstruction has almost always been overcome by the long-continued, persevering employment of the dilator, but the opened canal does not always remove the condition thought to depend upon its closure,—dysmenorrhœa and sterility still remain. I have, however, never seen the ill effects spoken of from the employment of tents. I cannot recall a single instance where more than a few hours' inconvenience has been produced; and in such cases the expanded sponge, when removed, has proved to have been originally much larger than it was supposed to be—showing that he who employs these tents should be acquainted with their uncompressed dimensions. My experience has taught me, then, that these contractions, however firm they may be, may almost invariably be overcome. The physician need not feel that the part is undilatable because the application of three, or five, or half a dozen tents does not overcome it; in a case occurring in my practice, about a year since, *eighteen* sponge-tents were introduced at intervals of two and three days before the canal was opened. My perseverance was rewarded by the perfect relief of the patient. I could point, were it necessary, to several cases where, after years of sterility, the sufferer has been relieved and borne children, and in the intervals of their childbearing have suffered no dysmenorrhœa. I have repeatedly seen cases of dysmenorrhœa remain relieved for years, and known no return. In a word, I have relied upon dilatation to relieve these affections, and whatever opinions may be advanced by others, so long as I feel we have a remedy from which we can confidently expect relief, and very rarely observe any injurious effects, I shall feel it my duty to employ it.'

"That cases do occur where the difficulty *cannot* be removed by dilatation, there can be no question; but 'that incision is the only efficient and permanent remedy (in most cases) for dysmenorrhœa,' I unhesitatingly deny.

"Let us for a moment look at the method proposed. Those who advocate it should of course be satisfied that it has superior claims over the means now employed. I have thought the ill effects produced by *distension* might be occasioned by want of care; but those arising from incision *may* follow the operation of the most skilful surgeon who advises it, when the metrotome cuts through the walls of the *inner os;* and Dr. Barnes states, to employ his own language, 'there is no doubt that the surgeon has actually cut through the substance of the uterus, and wounded the plexus of vessels outside; hence severe and dangerous hæmorrhage has ensued, and inflammation of the periuterine tissues.' And even supposing the operation should be successfully performed, it is acknowledged by Dr. Routh, one of its advocates, 'that such an amount of contraction frequently exists as to render it necessary to have a dilating substance worn for a considerable length of time to prevent its perfect occlusion;' and Dr. Williams observes that 'oftentimes no relief is afforded. He had seen a patient whose cervix uteri had been slit up on both sides, forming two large protruding lips, without affording any relief to the sufferer.' Where the external os has been almost cartilaginous to the feel, I have overcome the obstruction with the hysterotome; but I have never attempted to divide the internal os. I cannot, however, recall the instance where it was required."—*Boston Medical and Surgical Journal,* September 2d, 1866.

CHAPTER IX.

METATITHMENIA (*Μετατιθήμι μην*); OR, MISPLACED MENSTRUATION AND PERIUTERINE HÆMATOCELE.

THE accident to which I apply the above terms is an effusion of blood in tissues around and above the uterus, the effusion being sometimes very extensive, at others limited to a small space. The effusion may take place in the vaginal wall, between the vagina and rectum, tearing up their connecting tissue, or in the posterior wall of the uterus, beneath the peritoneum, or between the peritoneal layers of the broad ligament beside the uterus, or in the peritoneal cavity. The mode of the accident varies somewhat, owing to the locality in which this blood is found. The blood is effused in interspaces beneath the peritoneum and elsewhere, as the effect of a rupture of some vessel; but while the effusion may be, and, perhaps, generally is, the result of a ruptured vessel of the ovary, the blood sometimes also arrives in the peritoneal cavity from the uterus through the Fallopian tubes. We are not yet able to decide which of these circumstances is the more common.

This accident happens most frequently at the time of menstruation, or very near it. As an accompaniment of menstrual congestion, the bloodvessels of the whole genital organs are greatly distended, and in certain cases this turgidity becomes too great for their capacity, and a rupture is caused at some particular place; or, the cavity of the uterus being filled with a profuse flow into it, the blood regurgitates through the tubes into the peritoneum. It is not likely, however, that any considerable effusions are thus caused, so that the sudden and copious collections sometimes observed must be accounted for upon the supposition that a small arterial twig has given way in the ruptured ovisac at the time of the escape of the ovum, and poured the fluid rapidly into the sac formed behind the uterus by the descent of the peritoneum. The instances I have observed were more frequently connected with cases of disordered menstruation, but I have also seen the accident in patients whose menses seemed normal.

Dysmenorrhœa may be regarded as the most common deviation accompanying misplaced menstruation.

There can be no doubt but that effusions of blood, in every respect similar to misplaced menstruation, are caused by the condition of the uterus and appendages in abortion after labor, and as the result of other causes of intense congestion; but when so the *modus in quo* is precisely the same, the congestion being caused, not by the menstrual molimen, but by the congestion of pregnancy and morbid excitement which sometimes attend these two states,—rupture of a small vessel or regurgitation being the immediate condition.

Sanguineous collections arising in this way may be minute in size, but sometimes the quantity of blood is dangerously and even fatally large. The small collections are forced into places where distension is most difficult, as in the cellular tissue, while the large effusions are met with in the peritoneal cavity. Immediately after the blood is extravasated changes begin to take place in it and the tissues occupied by it. Inflammation to a greater or less degree almost always is the result. In a mild grade the inflammation causes an effusion of serum, which augments the bulk of the accumulation and gives the appearance of much blood, when in reality there is but a small quantity. When this is the state of things, the disappearance of the tumor by absorption may be expected in a comparatively short time, and we often see it removed by absorption in a very few weeks.

Dr. G. Bernutz has lately studied the pathology of uterine hæmatocele, and presents his views in a series of interesting articles (*Arch. de Tocol.*, March, April, and May, 1880). The most important conclusions of this study are summarized by Bernutz as follows:

"1. Intraperitoneal uterine hæmatocele may arise in two entirely distinct and different ways.

"2. In one case, which may be termed 'classic' hæmotocele, hæmorrhage takes place from rupture of the products of extrauterine gestation, or from rupture of some of the internal organs of generation, or the escape of the blood which had distended the oviducts into the abdominal cavity, where a secondary peritonitis is set up by its presence, this inflammation leading to incapsulation of the bloody collection.

"3. In other cases the hæmatocele is the result of a primary pelviperitonitis, the hæmorrhage occurring at a period more or less remote from the incipience of the serous inflammation. In this case the disease is a secondary manifestation of inflammatory action, and its true origin is found in the newly-formed membranes lining the pelvic peritoneum.

"4. These neomembranous hæmatoceles may be symptomatic of various conditions. Thus they may indicate an acute pelviperitonitis in a woman who was previously attacked by a more or less severe inflammation of the pelvic peritoneum, or they may point to a repetition of former subacute inflammations, or, in fine, to a chronic pelvic peritonitis of a particular kind. There are, therefore, two varieties of hæmatocele symptomatic of pelvi-peritonitis, each of which has a pathogenesis of its own.

"5. In the hæmatoceles denoting an acute or subacute peritonitis, the hæmorrhage arising in the newly-formed membrane is from the outset rather profuse, being commonly determined by menstrual congestion. For this reason an intraperitoneal hæmatoma becomes at once manifest. Frequently it becomes a matter of difficulty to distinguish between the two kinds of hæmatocele unless the period of incipiency has been observed by the physician. Fortunately the practical importance of this fact is not very great, since the treatment is essentially similar in both varieties of the disease. In the second form of hæmatoceles, which alone exactly corresponds to Virchow's description, the hæmatoma is the result of scarcely suspected morbid action, which is very well indicated by the name of hæmorrhagic pachypelviperitonitis. Under the influence of this chronic process the pelvic peritoneum is occupied by stratified patches of new-formed membrane. In this way it becomes thickened as it were, and slight hæmorrhage takes place between the superimposed lamellæ, thus forming interstitial blood-cysts. These hæmatoceles are strictly analogous to similar tumors of the tunica vaginalis."*

The intensity of the inflammation is frequently much greater, proceeding through the stage of serous effusion to the production of fibrinous deposit. A hard tumor is the result. This again may remain for a longer or shorter time, and then very slowly disappear, or only be partially taken away, leaving a permanent hardness, or, what is not unfrequently the case, proceed to suppuration and discharge in some way.

I have seen as many as two cases terminate fatally by the exhaustion of suppurative fever without the discharge of the contents of the tumor. When suppuration is fairly established by the inflammation thus arising, exulceration and evacuation follow as a general rule. The vagina is most frequently perforated by the ulcerative process, but the rectum, bladder, or uterus may serve as the conduit of discharge. If the inflammation is of an acute character, and the steps in the process of evacuation rapidly succeed each other, the character of the discharge will partake largely of a bloody quality; but should the time required by exulceration be considerable, pus will prevail in the composition. In any case, however, the discharge is a mixture of pus and changed blood. This last is sometimes very greatly changed, sometimes but slightly. In rare instances the peritoneum is inundated by rupture into its cavity of this mixture of pus and blood, and overwhelmed with a general inflammation, soon resulting in death. I have seen cases of this kind, which were verified by post-mortem examination.

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* January, 1881, number of the American Journal of Obstetrics.

After absorption in cases attended with the milder grade of inflammation, very slight traces, if any, can be found by examination of the patient. When effusion of fibrin takes place, displacements, permanent adhesions of the uterus and other parts, and deformity, will be left behind, slight or considerable, as the amount of deposit was small or great. These changes will, of course, be greater after the process of suppuration and discharge has been reached by the inflammation. Fistulous and tortuous openings may also embarrass the convalescence of the patient, or even by their long continuance exhaust her.

Symptoms.

The symptoms vary in different instances. The attack is generally sudden and well marked. During the menstrual flow, or it may be just before or after, the patient is seized with severe pain in the hypogastrium or one of the iliac regions. Frequently there is also a sense of faintness, sometimes slight, but often it amounts to complete syncope. In place of the faintness there are sometimes coldness and tremors. The pain becomes persistent, and, perhaps, less severe, but not unfrequently it increases for a considerable time and then gradually diminishes. After the inception the pain usually spreads over the abdomen to the back and hips, and sometimes down the thigh and leg. As the pain becomes greater or extends over a greater space, febrile reaction is developed, generally moderate in grade, but occasionally excessive; the pulse becomes rapid, the heat considerable, and the patient complains of great depression and thirst. The abdomen increases in size and becomes tympanitic, while there may be a distinct tumidity and hardness felt in one of the iliac regions; sometimes the hardness extends over the hypogastric to the other ilium. This hardness and swelling may scarcely rise above the pelvic brim, but it not unfrequently is perceived extending as high as the umbilicus. It is not much, if at all, tender to the touch. It is irregular in its outline also. In very rare instances the effusion takes place slowly, the symptoms are developed quite gradually, and the time of the beginning is not so definite, but the subsequent course is apt to be the same.

After the symptoms are fully manifested, they pursue a course corresponding to the grade of inflammation which is awakened by the effusion. In some cases the inflammation around the effusion is active and intense, and continues with severity until suppuration and exulceration end the process.

Of course the fever is corresponding in grade and persistence, passing through the high grade to hectic, attended with all its exhausting discharges. If the inflammation is less acute, the fever may be persistent for weeks, and sometimes for months, but of more moderate grade, until it gradually subsides, or slowly ends in suppuration and discharge. Fortunately, in the large majority of cases, the amount of the effusion is small, the grade of inflammation slight, and the duration but a few days or weeks.

There are two ways in which individuals are rendered miserable by the frequent recurrence of this trouble. One is, when all the symptoms subside entirely for months, and then return. The tumor entirely disappears, the inflammation is wholly gone, and the patient feels that she has fully recovered her health, when, suddenly, during a menstrual flow, she is again seized with pain, swelling, fever, etc., which again subsides to be repeated more or less frequently. I have a patient who has suffered attacks of this sort perhaps twenty times in the last six or seven years, in whom the tumors have at different times been mistaken for ovarian or uterine tumors. In the other way the subsidence is only partial; there is all the time some tumidity, some inflammation, and more or less sympathetic suffering, with occasional severe returns. More blood is effused, the tumor is increased in size, and the inflammation intensified, and all subside to a partial extent and return again.

When the tumor is much inflamed and suppurates, it may suddenly discharge through the vagina; all the urgent symptoms readily subsides, and the patient becomes convalescent. Again, the discharge is sometimes slow and difficult, the relief is imperfect, and a protracted convalescence the result. But sometimes, after a course corresponding to the above description, sudden and general peritonitis is lighted up by extension of inflammation from the sac, or a discharge of some of its contents into the peritoneal cavity.

The discharge is generally fetid and highly irritating, consisting of partially decomposed blood, pus, and ichor. It is always offensive compared with discharges from an ordinary abscess. I have seen one or two instances in which the general symptoms were not manifested at all, nor did the pain amount to anything more than an inconvenience, not very difficult to bear.

It is interesting to observe the effects of this misplaced menstruation upon the flow *per vias naturales.* Occasionally no effect seems to be produced, the flow being natural in quantity and duration; in fact, it is just at the time of the cessation of the discharge that effusion into the tissues takes place, but at other times there continues for many weeks a constant stillicidium of blood. Or, occasionally,—when the menses occur during the course of the symptoms,—the amount of discharge is very much increased. I knew one patient that had a constant slight sanguineous discharge from the vagina for six months, and at the regular menstrual periods copious hæmorrhages. In some cases the flow is more scanty than usual.

Diagnosis.

There are several conditions with which this sanguineous effusion may be confounded, if some caution is not observed. Inflammation of pelvic cellular tissue, or pelvic abscess, is the one most likely to be mistaken for metatithmenia, or this last for the first. And as I have already shown abscess is sometimes the result of misplaced menstruation, the effusion in the tissues exciting intense inflammation, which proceeds to the stage of suppuration.

In cellulitis the inflammation is not ordinarily ushered in by the same suddenly occurring acute pain and faintness. Chilliness and fever are more marked from the beginning, the pain usually commencing after the fever has begun, or, at least, increasing after the fever is established. The tumor above the linea ilio-pectinea is not perceptible for many hours, oftener one or two days; it is extremely tender, and even in its outline.

In metatithmenia the tumor is observed in a few hours, and is not so very tender to the touch. It may be handled and pressed upon much more freely than the tumor of simple inflammatory origin. If examined per vaginam the inflammatory hardness and swelling is very firm. It is usually lower down and more to one side. The tumor from sanguineous effusion is quite elastic at first, and presents an edgelike projection down behind the uterus, entirely below the os and cervix. The finger may be pushed up between the cervix and the tumor, and the thick convex edge of the latter reminds one of a thick cake. There is very little tenderness, and vessels may almost always be felt pulsating over this projection. I need not say that this is never the case in the early stages of cellulitis. The vessels in this last are obliterated by fibrinous and serous effusion.

If inflammation of a high grade speedily follows the effusion of blood in the tissues, the symptoms of the two may be so intimately blended as to make it doubtful how the tumor began, and, in fact, it may be converted into pelvic abscess.

Tumors of the uterus, under certain circumstances, may be confounded with the tumor of sanguineous effusion; but their firmness, the want of conformity to the shape usually assumed by this last, the enlargement of the uterine cavity, our ability to isolate them by the fingers and probe, their gradual, unperceived growth, and their mobility, will almost always suffice to make the distinction manifest.

From ovarian tumors it may be distinguished by the more regular outline, fluctuation on percussion, less grave symptoms, gradual development, absence of the projecting edge behind the uterus, the want of the beating vessels, etc., in ovarian growths.

Displacements of the uterus may always be made out with great certainty by introducing the probe into its cavity to ascertain the direction of the fundus, and correcting its deviations. Hence the diagnosis need not be long embarrassed by any question in reference to them. Retroversion of the impregnated uterus is constantly attended with great urinary distress, while metatithmenia seldom is.

Extrauterine pregnancy, perhaps, in some instances, more nearly resembles it than any other, but the enlarged and flaccid cervix, open os, dark color, and enlarged cavity, in this sort of pregnancy, and their absence in the accident we are considering, will suffice to distinguish between them.

Prognosis.

The dangers to be apprehended in uterine hæmatocele arise from: 1st, the shock of the effusion in the peritoneal cavity, which, however, is not generally considerable; 2d, fatal exhaustion from the amount of effusion in the abdominal cavity; and, 3d, inflammation and its effects. From inflammation we may fear death, permanent damage to the organs about the pelvis, and great suffering. Very few patients escape without protracted suffering, often for weeks, and sometimes months.

Damage to a greater or less degree frequently follows the displacements, adhesions, perforations, and thickening of the uterus, vagina, rectum, and bladder. The exhaustion of protracted febrile excitement; the perspiration, diarrhœa, and vigils not very seldom wear out the vital resistance of the patient, who is often of a very delicate constitution; or sudden and violent inflammation of the peritoneum overwhelms and destroys her.

The prognosis in any given case will be governed by the intensity of the symptoms and the comparative strength of the patient. If the amount of the effusion be never so large, and there be but little inflammation, the prognosis is more favorable than if the effusion be small and the inflammation great. In fact, we may with great propriety form our prognosis by the amount and intensity of the inflammation alone, as it is almost the only source of danger.

As before observed, a cause of death, though not frequent, should nevertheless be mentioned as influencing the general subject of prognosis in misplaced menstruation, viz., a fatal amount of extravasation of blood in the peritoneal cavity. More than one case is recorded in which there was fatal prostration, coming on and pursuing its course in a few hours, which, when examined, revealed, as the source of an extensive and copious hæmorrhage, the ruptured twig of an artery on the ovary. Of the many cases that come within our observation, however, the number that thus prove fatal are extremely few.

Treatment.

The three great facts of this accident—hæmorrhage, pain, and inflammation—afford us sufficiently plain indications for treatment. It is very seldom that we are sent for, or in any way see these cases, until after the hæmorrhage has exhausted itself or been stopped by backward pressure, after filling up the space into which the bleeding takes place. Should we, however, meet with an instance during the hæmorrhagic stage, it would be very proper to make use of ice to the pelvic region, perfect quiet, and astringents internally, until the effusion ceased; but, as I said before, such opportunities seldom offer themselves. The cases as we ordinarily see them have proceeded through this stage; the effusion, in fact, is generally accomplished in a few moments, or at most in very few hours. When we see the patient, she is either suffering with pain and prostration or coldness, the primary effects of the hæmorrhage; or pain, fever, and inflammation, and our treatment will be conducted according to the conditions in these respects. Our resources in the first condition will lie in the use of opium or other anodyne, to relieve the pain as much as may be necessary, and if the prostration or chilliness is considerable, to stimulate sufficiently to establish equilibrium in the circulation, but not febrile reaction. In very many cases it will be sufficient to keep our patient quiet, and place her upon moderate anodyne treatment, good nourishing diet, and perhaps, after the first week or two, tonics, and she will slowly rally from the first shock, absorption of the blood will result, and she soon will recover her health. In these moderate cases we cannot be too careful not to overdo the treatment. The patients will generally recover spontaneously in a few days or weeks.

But another class of cases occur, as I have already said, in which inflammation very soon succeeds the sanguineous effusion. A knowledge of the mischief which this inflammation brings about should make us prompt in meeting it with appropriate remedies. If the inflammation runs high, adequate antiphlogistic measures will be indispensable to a favorable course. An active cathartic of calomel and jalap or some other alterative cathartic should begin at once, while at the same time, if deemed advisable on account of the force of reaction, we may apply a dozen or twenty leeches. These may be followed by the tincture of veratrum viride, in doses of two drops every hour, until the pulse is brought down to its natural frequency and volume, if not below these conditions, and then continue its use in less doses, or the same less frequently repeated, for some time. According to my observations, the most of adults will be held at this point by taking as little as one drop an hour; some will require more and some less. The energy of this antiphlogistic course must be graduated by the force of inflammation; but few cases will require as much as is described here. Should the inflammation advance to suppuration, the remedies required will be supporting; at first, sulphuric acid and quinine, and afterwards these with wine or other stimulants, nourishing diet, etc. These cases are often so protracted, the patients are so much prostrated, and suffer so much pain, that great skill will be called for to adapt the anodynes, tonics, and nutrients to the various conditions of the patient for so long a time.

A question associated with the progress of inflammation, and one of great importance, is the propriety of evacuating the fluid. To evacuate the blood soon after its extravasation would seem to remove the cause of inflammation, and thus avoid it. To say that an early evacuation of the effusion would never be proper is perhaps to assume an extreme position, and there may be cases where such evacuation is advisable, but I think the number requiring it must be very few. Indeed, I should fear inflammation, from the sudden discharge of a large amount of blood from the peritoneal cavity, almost as much as if it were allowed to remain in it. There is another condition in which an operation for discharge of the contents of the tumescence is less a question of doubt, viz., when pus has become mixed with the blood, on account of inflammation. It is very important in some instances to puncture and discharge the fluid. When the patient is being worn out by the protracted course of the disease, and the perspirations and diarrhœa which so often attend it, we must interfere surgically for her relief. And again, when the fluid is increasing, and the tumor rising in the abdominal cavity, without showing any disposition to "point" in the pelvis, or any other place where it is desirable to have it do so, there is danger of the discharge of the pus and blood in the peritoneal cavity by rupturing the sac above, and we must anticipate it by choosing the place and mode. When we have determined to relieve the distension by puncture, we ought to use an exploring-needle or trocar to ascertain the contents before evacuating them. After being satisfied by this corroboration of our diagnosis, we may plunge a large trocar, or even a knife, into the most dependent part of the tumor. This point will almost invariably be immediately behind the uterus, but occasionally it will be at the side of the pelvis.

After free puncture, either with the trocar or knife, the discharge readily takes place, and the patient immediately experiences great relief. If the puncture is made to remove the blood before inflammation has begun, the evacuation may be more difficult, as it is often coagulated; in that case the opening must be made large with a knife, and if the blood does not easily flow, the finger may be introduced to break up the clots and facilitate their expulsion. After the contents are thus expelled as near as can be, they sometimes reaccumulate and are again discharged, and repetitions of these processes lead to still more chronic suffering, until the patient becomes a permanent invalid, or dies from such long-standing exhaustion. We may, with a good deal of certainty, cause contraction, granulation, and obliteration of the cavity, by injecting it with iodine, wine, or other irritant. The best way to secure efficiency in injections is to introduce through the fistulous opening, or one made for the purpose, a small flexible catheter, so as to reach the bottom of the cavity and throw the fluid through this tube. We thus place the fluid used in full strength in contact with the walls of the cavity, while the injection thrown out of a common syringe will mix it up with the contents of the sac, and thus dilute it.

Chronic Retrouterine Hæmatocele.

I have met with a considerable number of hæmatoceles that did not terminate by absorption on suppuration, but remained in a latent condition, sometimes for years, and then became the subjects of change in their contents which rendered radical treatment indispensable. In the history of many of these cases the essential facts necessary to lead to a rational diagnosis are lost.

The time when the effusion occurred is so remote that many of the symptoms have been forgotten, or taking place contemporaneously with an abortion, or paroxysm of dysmenorrhœa, the symptoms of hæmatocele were so blended with those of the other condition that they escaped notice. Not unfrequently our attention is called to these cases in the hands of inexperienced practitioners without being recognized, for a long time passing for retroversion of the uterus.

After a greater or less length of time some of them undergo rapid increase of size, from an accumulation of serum, while others grow more slowly, but still become decidedly inconvenient tumors.

One of the former kind has quite recently come under my notice. The patient was twenty-four years of age, the mother of two children, enjoyed good health until two years since, when she had, without any assignable cause, severe flooding, and was thereafter confined to bed for several weeks. She gradually recovered sufficiently to very poorly attend to her household duties. She did not have the advice of an experienced practitioner until three or four months before she came under my notice. Her physician at that time discovered a retrouterine tumor that extended above the brim of the pelvis, with the most prominent elevation on the right side, where it arose one and a half inches above the pubis. When first observed the lower portion of the tumor extended about an inch below the cervix uteri. From that time the tumor grew perceptibly until, at the time she came to me, the posterior cul-de-sac was very tensely distended. The lower end of the tumor was elastic, but too tense for undoubted fluctuation. The upper part of the tumor remained as above described. Dr. D. T. Nelson examined the patient on the same day, Thursday, the 24th of February, 1881. We requested her to call again on the 27th of the same month, or three days later. When she came again for examination we were both astonished at the rapid increase in size manifested at the lower end of the tumor. The lower end of the tumor was so much larger and descended so far down as to begin to separate the external labia. The question with us was between a fungus or malignant tumor, behind and attached to the uterus, or an old hæmatocele. She was at once admitted into the Woman's Hospital, and the next day a small trocar was thrust into the tumor for exploratory purposes.

A large amount of reddish serum was ejected with great force through the canula. I then made a small incision by the side of the trocar, through which I introduced my finger, and enlarged it so that I could introduce two fingers into the cavity. The fingers at once encountered large deposits of macerated fibrin clinging to the wall of the cyst. These were separated as far as practicable, the cavity thoroughly washed out, and several pledgets of cotton saturated with tincture of iron introduced. The serum contained albumen and the coloring matter of blood.

A very remarkable case, with the commencement of which I was cognizant, is recorded in the first volume of the *Transactions* of the Americam Gynæcological Society, by George H. Bixby, M.D., of Boston.

I saw the patient and attended her for three or four months after the effusion occurred and diagnosed retrouterine hæmatocele. During the time I attended her the tumor decreased decidedly, and I fully expected it to be entirely absorbed. The patient, as Dr. Bixby observes, passed out of my care, but remained in Chicago, where I could know somewhat of her condition.

She was an invalid during the whole seven years intervening between my attendance and the time she went to Boston. As she was leaving Chicago for Boston she desired me to make an examination. The tumor was easily recognized at that time, but was not large. I subjoin Dr. Bixby's description of the case after she went to Boston:

"Mrs. H——, aged thirty-nine, a resident of Boston, consulted Dr. Mack, of St. Catharine's, Ontario, for an obscure pelvic tumor. On the following day I was called in consultation. The patient was of dark complexion and nervous temperament. Menstruation, which first appeared at eighteen and recurred at intervals of three weeks, was scanty and painless. In her youth she was unusually fond of outdoor sports, and later in life indulged in horseback exercise. She was married at twenty-one, and supposed she miscarried two years later. Seven years previously, while under the care of Professor Byford for uterine disease, she became the subject of hæmatocele, but shortly after passed out of his hands. For two years Mrs. H. had been suffering from a peculiar pain in the left ovarian region, and also from renal and vesical derangements. She described the pain as occurring in paroxysms, at first light, gradually increasing in intensity until almost insupportable, then as gradually subsiding. Soon after the occurrence of the above symptoms her attention was directed to a tumor the size of a small orange at the seat of pain. In the dorsal position, with the limbs flexed, percussion gave evidence of a well-defined dulness in the left ovarian and superpubic regions; by bimanual palpation unmistakable fluctuation. The uterus was fixed, and lateroverted to the right; its cavity two and one-half inches in depth. Exploratory puncture (through Douglas's fossa), with a small trocar by Dr. Mack, confirmed the existence of fluid. Three pints of a light straw-colored serum were withdrawn by aspiration, which completely emptied the cyst. The result of an analysis by Dr. Fitz, of Boston, was as follows: 'A clear, light reddish-brown, odorless, slightly alkaline fluid, sp. gr. 1020; absence of sediment; abundance of albumen, it becoming solid by boiling; abundant chlorides and sulphates. Microscope reveals numerous oil-globules, a few round cells with large nuclei and a small amount of granular protoplasm; an occasional granular corpuscle. If it be a question between ascitic or ovarian, the latter is probable.' Notwithstanding this result we were disposed to consider this case one of encysted dropsy of the peritoneum following hæmatocele. Being now intrusted to my care she was ordered rest in bed, no treatment. Not the slightest reaction followed the operation, and in the course of three weeks she resumed her ordinary duties.

Dr. Mack was disposed to attribute much of the pain as well as the renal derangement to pressure upon the nervous filaments of the tissues in the vicinity of the cyst. The description of the pain and the renal and vesical symptoms were at least suggestive of some interference with the functions of the ureter by pressure from the cyst.

"The following letter from Dr. Byford, received since the operation, tends to confirm the diagnosis:

"'Dear Doctor: I can emphatically indorse your diagnosis and proposed treatment. In my own practice I have met with but two cases of serous accumulation after hæmatocele. One was cured by a single tapping with the aspirator, the other by establishing a permanent drain from the cavity. In the last case reaccumulation took place. I then punctured with a large trocar, and passed through the canula a flexible catheter, and left it in position. The cure was effected in about three weeks.'"

Diagnosis.

The diagnosis of these old hæmatoceles is not always easy. The history, if the patient can intelligently trace it, will often lead to a strong suspicion of the character of the tumor. The primary attack may date back several months, and sometimes as many years, and may have been distinguished by symptoms arising from the continued presence and occasional augmentation of the tumor, indicative of some form of pelvic disease. Not unfrequently, however, the commencement is so obscured by attendant circumstances as to evade the most diligent inquiry, when we shall be obliged to depend upon recent developments and physical examination for a diagnosis.

In many cases the patient will have suffered a long time from pelvic symptoms, and be aware of the existence of a tumor. The tumor is often mistaken for growths, as ovarian or uterine tumors, and even extrauterine pregnancy. In hæmatocele the tumor is situated behind and adherent to the uterus. The uterus is pressed strongly forward and upward, and generally to the right side, so that the fundus may be felt above the right ramus, itself simulating a tumor. Generally the top of the hæmatocele may be recognized by pressing the hand down into the brim of the pelvis, while the lower end will be found to fill up the cul-de-sac of Douglas, and distend it very greatly. The distension is especially downward, reaching occasionally as low as the external organs.

I should regard the forcible downward distension of the cul-de-sac with fluid as a very important, if not a distinctive sign of chronic hæmatocele. The upper part, or fibrinous covering of the hæmatocele, is inelastic and does not permit of distension in that direction, while the walls of the retrouterine pouch is elastic and permits distension. An ovarian tumor, a tumor of the lateral ligament, or an extrauterine pregnancy develops upward instead of downward. While any or all of these may be felt to occupy the cul-de-sac they do not forcibly distend it downward. Instead of displacing the uterus upward as well as forward, they displace it forward at first, and afterwards downward.

The hardness and more globular shape of a fibroid tumor, situated in the retrouterine space, will generally enable us to distinguish it from an old hæmatocele. An abscess is seldom situated immediately behind the uterus, and when it is there is generally so much hardness around the presenting fluid as to make the distension irregular, aside from the usual tenderness.

When the diagnosis cannot be made in any other way the tumor may be aspirated. The fluid drawn from an old hæmatocele is well described in Dr. Bixby's case. The coloring matter of the blood is always noticeable.

Treatment.

The proper treatment of the chronic hæmatocele consists in evacuating it, draining the cavity, and frequent injections of some disinfectant solution,—the carbolic acid or permanganate of potash. When a sufficient amount of fluid is removed for diagnostic purposes the trocar or aspirator needle may be taken as a guide for the incision. The incision should be made in the most prominent part of the tumor large enough to admit the finger. The index finger should be introduced through it, and be made to tear a large opening into the sac. The opening must be large enough to admit two fingers freely into the cavity. Large deposits of the fibrin of the blood will be found adhering to the inner wall of the sac. The removal of these coagula of fibrin is very important, for if allowed to remain they will undergo decomposition, and thus be the source of sepsis. The large opening I have recommended has the advantage of permitting the free use of the fingers for this purpose and the efficient cleansing of the cavity by injections. When carefully performed this operation causes little or no shock, and the patient usually recovers in two or three weeks from the effects of the evacuation. It requires several months for the sac itself to be removed by absorption. Eventually, however, it disappears to such an extent as not to be recognizable by an ordinary vaginal examination, and with proper care the patient speedily recovers her usual health.

CHAPTER X.

CHANGE OF LIFE—MENOPAUSE AND SENILITY.

AT the period when woman ceases to menstruate various changes in her system occur, which constitute what is termed "change of life." The peculiar anatomical feature noticeable is progressive atrophy of the ovaries, uterus, and usually of all the other female organs, including the mammary glands.

Dr. Tilt, in his excellent work on the *Change of Life*, says: "Puberty and the change of life are caused by anatomical changes, the one by ovarian evolution, the other by ovarian involution." I should say these two conditions were accompanied by, instead of caused by, the ovarian evolution and involution.

The change of life is an important epoch in a woman's existence, for if not, as Dr. Tilt thinks, the cause of many diseases, it is contemporaneous with a number of the most dangerous affections, and certainly modifies very materially the course of others. When not *accompanied* by disease it is normal, and usually leaves the woman, to say the least, in no worse condition than before it occurred. Generally she becomes more vigorous after it, and her prospects for life and health are increased.

The change of life is gradual, requiring from one to eight, or even ten years for the processes of involution and changes in all the body to take place. The average of the menopause is forty-five years. While it may not always be the case I think a very early or very late menopause is abnormal in other respects than time. The cases that come about very early in life are much more frequently than otherwise caused by pathological conditions. Peculiarity of organization is the only way to account for the remainder. Such instances as have fallen under my observation were without exception preceded by diseases of the uterus and probably of the ovaries. I say probably, because the ovarian affection cannot always be diagnosticated with certainty. The late menopause I have not met with as often, and I have not been so clearly convinced of the condition of the patients as in the former. In such cases as I have noticed most of the women seemed to be peculiarly vigorous, though sometimes I have thought the long-continued functional activity of the genital system appeared to depend upon chronic hyperæmia, caused by tumors, congestion, or inflammation.

Simple cessation of the menstrual return is not the *change of life.* When the menses cease from a failure of the general powers, the term will not apply.

The cessation of the menses does not always take place in the same way. Sometimes it occurs suddenly, with no change in the quantity, quality, or periodicity up to the last return, and with no premonitory symptoms. At other times a change in the periodicity of the menstrual flow occurs as a premonitory symptom of its cessation, the intervals in some cases being irregular, in others steadily decreasing in time until complete cessation occurs.

Not unfrequently the menstrual discharges grow progressively less for ten or twelve years before they completely cease. By this method the change of life becomes an accomplished fact only after a comparatively protracted transitional period. Sometimes a severe hæmorrhage is succeeded by the menopause.

Numerous other methods exist by which this important change is brought about; those which I have mentioned are the more common ones.

There are probably no reliable symptoms, not immediately connected with the cessation of the menses, to indicate the approach or even the progress of the change of life if the woman is in a perfectly healthy condition. The change, when a healthy one, is so gradual that the various organs and the nervous and vascular systems have ample time to accommodate themselves to the difference in the functions of the sexual system.

Does the change of life give origin to the diseases, or to any of them, occurring at that time? My opinion is that it does not. I believe them to be merely coincident. Fibroid tumors of the uterus and cancer of various organs do frequently occur about the time of the menopause, but they also are often met with both before and after that period. The long list of diseases and symptoms enumerated by Dr. Tilt are only evidence that the woman was diseased before, or became so at the time, from other causes, instead of indicating the change of life as the cause of them.

Yet there is little doubt that the progress of existing disease is modified by the changes in the circulation, nutrition, and nervous energies which occur at the change of life. In different parts of the present work I have alluded to this in describing the diseases in persons of different ages. Women undergoing the change of life who are not the subject of disease require no special management or treatment. It is well to have them as nearly as possible cured of the inflammations, congestions, and displacements which afflict them, as that will cause the process to be more easily and naturally accomplished. However, I think we need not fear that the change of life will be disastrous either as a cause of disease or by injuriously modifying those already existing. As elsewhere stated, we usually expect chronic inflammation and its consequences to be benefited, if not entirely cured, by senile involution of the organs of generation, and we also often find the fibroid degeneration and growths of the uterus arrested in their progress by the same change. In all respects, when not complicated, we may expect the menopause to be a favorable crisis in woman's life; and even when contemporaneous with diseases, it is much more likely to beneficially influence their course than cause them to be aggravated. In all my expressions on the subject I have steadily kept in mind the fact that the menopause is but an incident among the processes which go to constitute the change of life. Senility in woman, after a complete change of life, is a state in which she is free from the embarrassments connected with the active sympathies of the genital organs. Her diseases are more simple and less liable to become complicated. They are no longer female in their nature but fall into the category of common diseases. Exceptions occur to this statement. We do, though rarely, find some of the diseases, such as metritis, and even ovaritis, etc., commencing in old age. When they do originate in this stage of life, as the genital organs are in a state of feeble vitality, and the general system is incapable of exerting the same recuperative force as in earlier life, we may expect them to be both more obstinate in their resistance to treatment and more disastrous in their course.

CHAPTER XI.

ACUTE INFLAMMATION OF THE UNIMPREGNATED UTERUS.

Causes.

ACUTE inflammation, not arising from specific causes, generally affects the fibrous pòrtion or substance of the walls of the uterus. It almost always, if not quite, pervades the whole of the organ, the fundus, body, and cervix. Exposure to cold is the most frequent cause. The cold may be applied to the general surface when the uterus is in a state of turgescence from menstrual congestion, sexual excitement, or incomplete involution after labor or abortion. The same agent acting upon a portion of the surface, as the feet and legs, under a similar condition of the organ, may give rise to the same disease. It is not likely that cold, however applied, would be a sufficient cause, but for the predisposing condition I have mentioned. The excitement of excessive sexual indulgence may be carried so far as to cause a moderately acute inflammation of the substance of the uterus, as also blows upon the abdomen, etc.

It is not a very frequent disease, and yet I do not think it can be regarded as an infrequent affection.

Symptoms.

In speaking of the symptoms of the disease, I wish the reader to bear in mind that their intensity will vary from a mildness that will scarcely confine the patient to her couch to a very severe and grave disease, almost overwhelming the nervous system, with delirium and convulsions, and calling the stomach into excruciating sympathy with it. In considering the subject, I wish to be understood as attaching more importance to the suddenness than to the intensity of the attack in determining the nomenclature.

. It is somewhat owing to the exciting cause, as to the symptom which is likely to usher in the attack. If the cause is a moderate one, as excessive sexual indulgence, pain will generally begin some time before the general symptoms. If the cause is cold suddenly and extensively applied to a menstruating patient, chills and rigors may precede the pain. However that may be, when the case is fairly developed there is fever, aching in the back, pain in the head and extremities, flushed face, and furred tongue. In addition to these general manifestations there is local pain, indicating the organ affected. This pain may be confined almost entirely to the sacrum and the lumbar region if the inflammation is moderate, but generally there is pain in the pelvis behind the pubis, or in one or both iliac regions. Sometimes the pain radiates in several directions up the abdomen, down the thighs, and around the body. The pain is usually of a dull aching, but sometimes of a sharp character. In addition to these symptoms indicating inflammation in some of the pelvic organs, the nervous system is often affected with hysterical symptoms, convulsions, coma, laughing, crying, or unreasonableness of some kind. I should have mentioned among the local symptoms dysuria and difficult and painful defecation. Should the peritoneal covering become involved there is swelling and greater or less tenderness of the abdomen. Nausea and even vomiting are not infrequent symptoms.

After a week or more of this kind of suffering the symptoms gradually subside, and the patient slowly recovers her usual health; or sometimes the subsidence of the pains is not complete, and she continues to suffer with a chronic form of inflammation. The termination is almost always in resolution or the chronic form of the disease. Possibly, in some exceedingly rare instances, the force of inflammation is spent in some circumscribed locality, and it proceeds to suppuration. I have lately seen an instance of this kind where the suppuration was in the anterior lip of the cervix.

Prognosis.

The termination is so frequently in resolution or a moderate form of chronic inflammation, that we may almost always expect complete or partial recovery. Death probably never results in uncomplicated cases of acute metritis, but unfortunately we occasionally meet with grave and even fatal peritonitis, apparently resulting from extension of the disease from the uterus. It has been my misfortune to have lately met, in consultation, with two instances of this sort. Although the prognosis is favorable, as a general rule, so far as the recovery of the patient from the attack is concerned, it is not so favorable for the complete re-establishment of health, as the patient is likely to be affected with chronic inflammation in the body or cervix. Not unfrequently we trace chronic inflammation back to a moderate attack of the acute.

Diagnosis.

Inflammation of the cellular tissue beside the uterus, metatithmenia, rectitis, or cystitis, cause symptoms which may be mistaken for metritis. When doubt exists it may be easily and certainly solved by a digital examination. If the bladder is the seat of disease, the tenderness complained of by pressing it between fingers in the vagina and others above the pubis will be sufficient proof; pressure may be made upon the rectum by including it between the introduced fingers and the sacrum. The inflammation at the side of the uterus, or cellulitis, causes tenderness and hardness close to the iliac bones on the side, and the hardness seems to be continuous with the bones. The greatest tenderness is therefore close to the side of the pelvis. In all these cases the uterus may be touched, provided it is not moved so as to press upon the inflamed part or organ without causing pain. If it is the seat of inflammation the tenderness will be confined to that organ, while all the rest are free from it, and may be handled freely. We should not forget that all these organs may be implicated in one great mass of acute inflammation, and all the pelvic contents be intolerably tender to the touch. In an examination to diagnosticate inflammation of the uterus, I need hardly say that a resort to instruments is unnecessary.

Treatment.

The intensity of the inflammation will govern us in the activity of treatment. If it is not attended with great pain or febrile reaction, although our remedies must be the same, there is no need of using them with the same energy. We should, however, bear in mind the great likelihood of leaving the chronic form behind, and be diligent in our medicinal and hygienic appliances, until every vestige is gone, when practicable. If the attack is moderate, it may sometimes be interrupted in the beginning, by measures to induce a copious perspiration, more particularly if caused by an exposure to cold. Even a smart attack may sometimes be relieved by a large dose of opium and a steam-bath, used within a few hours after the commencement of the symptoms. After the symptoms have become fairly established and have lasted for twenty-four hours, we must not expect to find immediate relief, and should begin the systematic use of antiphlogistic treatment. In the subacute form, a brisk cathartic, foot-bath, and fomentations over the uterus, should be followed by tart. antimony, muriate of ammonia, and calomel.

Perfect quietude should be enjoined also, and rest at night may be insured by giving one grain of calomel, with twice the amount of opium, in a pill at bedtime. Continued for five or six days this will generally induce slight mercurial effect, when the pain and other symptoms will pretty surely subside. If it does not do so, a blister over or a little above the pubis will aid in banishing them. If the attack is severe, we ought to add to the above remedies the more immediately depressing. The patient may be bled from the arm until a decided impression upon the pulse is produced, or we may apply from ten to twenty leeches to the vulva and groins, as the depletant measure. In the country, where leeches cannot be had, scarification and cupping can be profitably substituted for them. Should arterial excitement be high after the depletory measure, the tinct. of verat. viride in doses from four to six drops every four hours, with the ammon. mixture, will be an efficient adjunct to our remedial measures. The calomel should be withheld as soon as its specific effects are produced.

I should not discharge the obligation I feel to the student in the treatment of this disease were I not again to caution him against an imperfect cure of it. Very often it becomes chronic, and renders the patient miserable for years. We should try to avoid this consequence. Too early a resumption of duties and active exercise should be especially prevented. When practicable, a continuation of treatment and avoidance of the causes which produced the inflammation are of equal importance. As a means of perfecting the cure which the more active treatment has brought about, the sedative effect of water affords us valuable aid. The sitz-bath and vaginal injections are the modes of using it. The sitz-bath ought to be used as much as the time and patience of the patient can be made to allow. An hour is short enough time, and two hours is better, twice or thrice in twenty-four hours. The injections should be copious, and may be used in the bath and of the same water. From two to four gallons of water ought to be passed through the vagina in this way each time the bath is used, by means of the perpetual rubber syringe.

Acute Inflammation of the Mucous Membrane of the Uterus.—I do not know that I have ever met with an uncomplicated case of acute inflammation of the mucous membrane of the uterus. Cases that I have seen have been connected with inflammation of the vagina, and have arisen as the effect of some poison directly applied to the membrane. Most of them were gonorrhœal, but in some I have been puzzled to determine whether the poison of this affection was the cause or not. Probably this poison gets into families, where and in ways it ought not, and thus deceives us. However this may be, I think one of the worst features of gonorrhœal inflammation is the frequency with which it invades the mucous membrane of the uterus and the difficulty of completely eradicating it. It is very apt to lurk in the uterus after the acute symptoms are removed and the inflammation gone entirely from the vagina, and thus require treatment as chronic endometritis.

If I am not deceived by my observation, acute endometritis, of a non-specific character, is a very rare affection; and as I have not seen it, and doubt its existence, I do not feel justified in compiling a description of it.

CHAPTER XII.

GENERAL CONSIDERATIONS ON "UTERINE DISEASE" OR HYSTEROPATHY.

There is a long list of symptoms, called nervous, or sympathetic, which, although not exclusively confined to women, are more frequently found to manifest themselves in them. They were formerly regarded either as independent affections, or as having various sources of origin; and although hysterical was the term usually applied to them, it was not definitely known in what manner they originated. Patient investigation has given us more definite and correct notions of them, and we have come to regard them as nearly always dependent on trouble of some kind in the sexual system. Medical men, however, are not united in the opinion that the symptoms alluded to are thus caused, but are divided into two well-defined parties with respect to uterine pathology.

1st. There are those who believe that the uterus has very little sympathetic influence on the system; that the diseases of that organ are more frequently the result of diseases in other organs than of independent origin; that the symptoms accompanying and almost always found in connection with actual lesion of the uterus do not at all depend upon this organ; that these symptoms may be cured without any attention to the condition of the uterus, and, in fact, whatever cures them, almost always cures the affections of that organ.

2d. The other party holds the opinion that the sexual system of the female, in a state of disease, exercises a very morbid influence over nearly the whole organization; that this morbid influence is particularly exerted over the spinal and cerebral nervous systems; and that the only sure and permanent relief is found in the cure of the disordered condition of the uterus.

Those who adhere to the latter view may be classified under two subdivisions, one of which holds that the sympathetic influence of the uterus is only manifested when that organ is inflamed or ulcerated, and that the cure of the inflammation and ulceration relieves the symptoms. The other maintains that inflammation and ulceration are only of slight, if indeed of any, importance; while the cause of all the difficulty is some sort of displacement.

It will probably surprise the student when he is told that all of these diverse and various opinions are held by gynæcologists of equal eminence, integrity, and opportunity for observation. There is reason for surprise in this consideration, and yet this same diversity of opinion exists in all departments of medicine; for example, as to the nature and treatment of inflammation, as to the essential nature of typhoid fever and its treatment, as to the local or general origin of cancer, and the propriety of extirpation. How can this discrepancy be accounted for? It is not my purpose to answer this question at length, but merely to indicate a few obvious considerations, of which one is that the attention of medical men has been too recently directed with sufficient intensity to the points involved to enable them to make an induction full enough to convince by its results all the members of the profession of the correctness of any one view. This, therefore, is just the time when we meet with conservatism in the views of temperate and judicious investigators, as well as with the less laudable conservatism of those who have lived too long to improve. Another consideration is, that while judicious practitioners hold antagonistic opinions as to the nature of diseases, they pursue so nearly the same line of practice as to lead to similar results in the treatment of them. A third consideration relates to the power of prejudice, which forms in very many minds an invincible barrier against the acquisition of truth; and the opinions imbibed in early education are those which are maintained the most persistently, sometimes in consequence of an unwillingness to learn, and sometimes even against the light of reason itself. From the pernicious influences of association and prejudice neither learned nor unlearned are exempt.

Those who deny to the uterus much sympathetic importance in a state of disease are compelled to acknowledge it under states of increased vital energies. I think it is inconsistent to express a doubt of the sympathetic influence of an organ in a state of disease, while we admit that the same organ, when laboring under unusual vital excitement, causes an exaltation, depression, or depravation of function in many important organs in the system. The stomach, when laboring under the stimulus of digestion, influences to a great degree some of the important organs of the body. The brain is always more or less influenced by digestion; when the stomach is strongly engaged, the brain is overwhelmed, and sleep is unavoidable. This is well exemplified in the torpidity of the serpent; when gorged he is helpless. When the brain is profoundly engaged, digestion is imperfect and sometimes wholly arrested. In a state of disease there is also a close sympathy between these two organs. When digestion is taking place, the secretions of the kidneys differ from their state at other times; and this is not so attributable to the change in the composition of the blood (for this difference occurs too early to be due to such a cause) as to the influence of digestion on the innervation of those organs. There is very close sympathy between the kidneys and the stomach in a state of suffering. I cannot remember a case in which two organs sympathizing in their healthy functions do not more obviously affect each other in a diseased condition. Why may we not, therefore, reasonably infer this to be the case with the uterus and other organs? It is interesting to notice some of the physiological and pathological effects evidently caused by the changes going on in the genital system of both male and female. All physiologists agree that without a development of the genital organs, particularly the testes and the ovaria, there is permanent nullity in the characteristics of the individual. When the menses make their appearance they bring with them a long list of physical and functional changes, and at each periodical recurrence there is more or less nervous and functional derangement. Disease results when this process is arrested. Greater effects are produced by pregnancy. A case reported by Dr. Tyler Smith, in the *Transactions of the Obstetrical Society of London*, for 1859, exhibits uterine sympathies in a strong light. Dr. Smith says:

> "In the early part of September (a little over two months from the probable time of conception), after she had been six weeks in the hospital, I was asked to examine her, the probability of pregnancy having suggested itself. She was at this time in a state of extreme emaciation; the vomiting was constant; the pulse ranged from 120 to 140; there was great tenderness of the epigastrium, and delirium occasionally supervened. At other times her state was one of semi-consciousness. She lay helplessly in the supine position, unable to move her body and limbs, from profound debility. I ascertained that the catamenia had last appeared about a fortnight before she came to the hospital (18th of July). She confessed, after much denial, to intercourse on two occasions shortly after this menstruation. The sickness came on suddenly and had continued without intermission. The uterus was found, on a digital examination, to be enlarged and the os uteri softened. The areola were rose-colored and the follicles somewhat developed, and the mammæ were full and rounded, the development of the breasts contrasting in a remarkable manner with the atrophied condition of the body generally. These facts rendered the existence of pregnancy so extremely probable,

that she was subsequently placed under my care and removed to the Boynton ward."

On a regimen consisting of one teaspoonful of beef tea alternated with the same quantity of milk the vomiting ceased; a gradual increase of these articles improved the condition of the patient until the 3d of December, when she aborted. She did well for two or three weeks after the abortion, when symptoms of acute phthisis appeared, and she left the hospital in February, 1860, in an advanced stage of consumption. When in her lowest condition, soon after putting her on the beef tea and milk, Dr. Smith describes her as follows:

> "The pulse continued high, and other symptoms of exhaustion remained without abatement. For many days it was impossible to determine whether she was in that state of pause from vomiting produced by exhaustion, which has sometimes been found to precede death in such cases, or whether the stomach was slowly regaining its tone. Bedsores appeared on the hips and nates; the process of emaciation continued, and on the 16th of September her weight was only *forty-seven and a half pounds*. . . . I am not aware of any instance on record of such a light weight. Before the commencement of her illness, she is represented to have been plump and in good condition."

Dr. Smith adds:

> "In some of the worst and most dangerous cases of vomiting from irritation of the gravid uterus, the peril occurs at such an early period that pregnancy may not be suspected, and if the suspicion be entertained it is difficult to diagnose it with certainty. I believe that many fatal cases occur from this cause in hospital and private practice without their real nature being suspected. There is nothing in the whole range of physiology or pathology more extraordinary than the fact that the gravid uterus, without itself being the seat of special pain, irritation, or disease, should excite fatal disease by reflex irritation in some distant organ. In this way pregnant women may be destroyed by secondary disease of the brain, heart, lungs, kidneys, stomach, or intestines. In fact, there is in particular cases no limit to the poisonous influence exerted on the rest of the economy by the gravid uterus."

He would be an obstinate skeptic in pathology who, having once observed such a case or having read the above graphic sketch of it, should ignore the uterus in his pathological estimation. Can it be possible that an organ so potent in evil work upon other organs under a state of physiological hyperexcitement, does not exert any bad influence in inflammatory hyperexcitement? I think there is no doubt that it does do so; and I affirm, after an observation of a large number of unmistakable cases, that the unimpregnated diseased uterus does produce grave and even fatal disorders in other parts of the organism by its reflex or sympathetic influence, while the organ itself is not suspected to be the original cause of the widespread disorder. This is also the testimony of others who have made these diseases a special study.

It is curious and instructive to notice the similarity of symptoms excited by a diseased uterus and those arising from spermatorrhœa; and I think that the opinion of the sympathetic connection between diseases of the uterus and other organs is much strengthened by the fact that, in the male, a slight inflammation or an irritation in the urethra excites much ruinous disorder in the system at large. This urethral inflammation, like uterine, does not often lead to fatal damage. It may be said that very extensive urethritis does not generally produce this effect; even chronic gleet does not produce it. But then chronic gleet affects a different part of the urethra. May there not, therefore, be very similar pathological relations between the portions of the genital canal affected in the two instances and the general system in the two sexes? Or will it be said that this kind of urethritis arises from general conditions? I think, considering the well-known and acknowledged causes of spermatorrhœa, such an assertion will not be made. The similarity of the two cases affords an argument in favor of the efficacy of local causes in producing uterine inflammations, and of the powerful and general sympathetic influence of them when once originated.

In order that the similarity may be the more apparent, I subjoin an abstract of some of the most common sympathetic influences of the two, and place them in juxtaposition for convenience of comparison:

Uterine Disease.	*Spermatorrhœa.*
Sterility.	Infecundity, with or without impotence.
Absence of sexual desires.	
Absence of fever.	Absence of fever.
Indigestion.	Indigestion.
Intestinal flatus, cramps, and pains.	Intestinal flatus, cramps, and pains.
Sometimes emaciation. Sallowness. A healthy appearance preserved in some cases under severe suffering.	Emaciation, with sallowness and leaden color about the eyes. Patients sometimes preserve a perfectly healthy appearance.
Great languor of capillary circulation.	Coldness of hands and feet.

Uterine Disease.	*Spermatorrhœa.*
Embarrassment in the respiratory movement.	Respiration often very much embarrassed.
Apprehension of disease of the heart from palpitation and other irregularities.	Palpitation of the heart, and other alarming derangements of its action.
Debility of muscles, and inability to walk.	Great weakness of muscles, sometimes almost paralysis.
Nervous spasms.	Spasms of epileptic character.
Pains in the loins and legs in the course of the nerves.	Pain in the loins and limbs; nervous shocks of pain.
Sight often bad, and other senses embarrassed.	Senses often seriously affected, particularly the eyes.
Vigilance.	Vigilance.
Cephalalgia.	Cephalalgia.
	Congestion of the brain.
Irritability in place of amiability.	Change of character on account of mental disturbance.
Despondency.	Hypochondriasis.
Failure of memory. Weakening of the mind.	Loss of memory; impairment of the intellect.
Mania.	Insanity.
Scarcely any tendency to spontaneous recovery.	Scarcely any tendency to spontaneous recovery.

The above comparison of symptoms between spermatorrhœa and uterine disease is not intended to be complete, but merely to call attention more pointedly to their similarity. The more we study them, the more apparent is the similarity in the general effects of these diseases upon the system. I have elsewhere intimated that the disease in the two cases is inflammation of a mucous membrane and increase in the secretion of it, to which in the case of spermatorrhœa is added the product of a gland, namely, the testes.

Another and the most important proof of the general influence of these local affections is the subsidence of the general symptoms after the local disease is cured. It is said by those who deny the local origin of nervous symptoms in the female that the general treatment is such as to insure a cure of the local disease in spite of local irritants. All judicious writers very properly direct the use of general treatment, yet it is not in many cases essential to a cure; in such it is merely auxiliary. This may be readily verified by anybody who will observe the effects of both kinds of treatment. I cannot resist the conviction, after a careful perusal of what I have seen written against the local origin and treatment of uterine diseases, that the experiments of the writers were not made with sufficient thoroughness; and I think that some of them have allowed themselves to be content with imperfect trials in consequence of preconceived opinions.

A judgment is only valuable which has been founded on thorough treatment; and as it requires very considerable experience, and a correct knowledge of the anatomical, physiological, and pathological appearances of the mouth and cervix uteri, I am convinced that errors arise unknowingly by misinterpreting what is seen; that, in other words, we do not always know when the pathological has entirely given place to the physiological and proper anatomical appearances. I have been often asked by medical men, why it is, that after a women has improved to a certain point under the influence of local treatment, giving promise of a satisfactory cure, all progress ceases, and the cure remains imperfect. In many instances I have had an opportunity of examining the cases in question, and have found that there was still sufficient disease to account for the state of the case, and that further local treatment removed the impediment to a cure and perfected it.

It would be contrary to all other instances in which general or secondary affections arise from sympathetic influence, if some of the secondary affections did not outlast the primary disease. Accordingly we find that in some cases of long-standing uterine disease the organs affected by it become permanently diseased, and after the cause is removed require independent treatment for their relief. No proper objection can be urged against the theory in consequence of this fact, as it is only in accordance with other examples, as has been already stated. The cases in which the general symptoms do not subside, however, after the cure of the local (when the former are the consequence of the latter), are not very frequent exceptions to the general rule, that to remove the cause is to cure the disease. And when the general symptoms are not cured, the condition of the patient is generally, if not invariably, improved by the removal of some and the amelioration of other symptoms.

CHAPTER XIII.

SYMPATHETIC SYMPTOMS OF UTERINE DISEASE.

I SHOULD not deem it necessary to go into a detail of the particular sympathetic accompaniments of diseases of the uterus, were I not convinced that they are often considered independent affections, and their origin not suspected by very many practitioners; and that an immense amount of suffering is now borne as a necessity by women, that might be relieved, if we would investigate and study their ailments with as much patience as, and with no more reserve than, we approach and investigate lung diseases or throat affections.

Dr. Scanzoni * says: "The sympathetic phenomena which very distant organs so often present during the course of uterine diseases are of the highest scientific importance." They are the more important, because our attention is more frequently called to them than to their original exciting cause. The secondary or sympathetic diseases often distress patients most, and the fact of their mentioning no other troubles may, without inquiry, mislead us into the opinion that they are independent affections.

The general symptoms attendant upon uterine disease are primarily sympathetic and secondarily neurasthenic. The sympathetic are reflex. An impression is produced on the ganglia of that portion of the sympathethic nervous system connected with the uterus and ovaries especially. Thus propagated it is conveyed along the nerve fibrillæ to the genito-spinal centre, and from this reflected to all the organs with which the genital system is in sympathetic relation.

The stomach is deranged in various ways; the bowels, the liver, and the spinal and cerebral nerve centres become affected. The derangements of digestion interfere with nutrition, the blood becomes poor in the materials calculated to sustain the vigor of the nerve centres; they become anæmic, and in this way nervous exhaustion occurs, and we have with the original sympathetic symptoms, or succeeding them, neurasthenia.

Neurological writers, among whom are Drs. Weir Mitchell, Beard, and Professor Jewell, ascribe neurasthenia to an exhausted state of the nerve centres. If I rightly understand what they mean by this it is

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* Diseases of Females.

that the brain and spinal cord have become damaged by overaction. I do not mean by *damage*, structural lesion, but a condition in which the cell action is slow, labored, and painful, because the parts have been overworked, and according to this method of interpreting the symptoms they prescribe rest as one of the essential parts of the cure. This is so different from the way I look at the subject that I will risk a concise statement of my views.

I think that the nerve centres do not become exhausted, but that the blood circulating through them does become exhausted of the material necessary to promptly renew the loss during functional action of the nerve centres. On account of the want of general vigor, the heart and arteries may not transmit the blood through them in the usual quantity, but if the circulation is not deficient in quantity, the blood itself is deficient in quality. With a deficient supply of nutritive material their functions are performed irregularly and imperfectly, and there is neurasthenia.

If my explanation of the origin of neurasthenia is correct, absolute rest is not so important to the cure as full feeding.

We shall be able to study the general symptoms of uterine disease more profitably by taking them up separately as they are manifested by different organs, and without attempting absolute correctness in this respect, it will be practicable to present them in something like the order of frequency in which they occur.

Sympathy of the Stomach.

The stomach is apt to be disturbed as early and as frequently as any other organ by uterine disease. This is no more than we would expect, considering how often and intensely it is influenced by pregnancy, and its great readiness to complication in most affections of other parts of the system. Simple anorexia is one of the most common of the sympathies of the stomach, as is also its contrary, voracity; but occasional unbecoming, and even disgusting, depravity of appetite is also not uncommon. Inappetency sometimes proceeds to the extent of loathing of food and to longing for inappropriate articles of diet. Nausea, with loathing of food and disgust at the smell of it, is another feature of stomach trouble; also frequent vomiting when the stomach is full; an absence of discomfort when it is empty, and the vomiting is sometimes worse when there are no ingesta, and nothing is expelled but some of its secretions, which are usually acid, but sometimes bilious. Gastralgia may occur when the stomach is empty; or during digestion, or immediately after swallowing food.

The capacity of the stomach to digest food of any kind is often impaired, but more frequently some particular sort of food disagrees with the stomach and embarrasses digestion; in short, almost every form of disordered stomach may be looked for as the result of the sympathetic influence of diseases of the uterus upon that organ. The grade of functional disturbance may vary from the slightest inconvenience to that complete arrest of digestion which rapidly induces inanition and death. Extreme cases of indigestion, however, are not of frequent occurrence, and the disturbances are rather those of great annoyance than such as result in very serious impairment of nutrition; and many patients who constantly complain of suffering very severely from sensitiveness connected with digestion attain to a state of apparent robust embonpoint.

Sympathetic Disease of the Bowels.

The bowels probably sympathize in diseases of the uterus next in frequency to the stomach, and their functional derangements are multitudinous. Constipation is very common. The bowels, in many instances, have apparently no natural tendency to move. I have one patient who assures me that she has often been fourteen days without any fecal discharge whatever, and that she dare not try how long she could go without it, but says that she always uses some means to promote the alvine evacuations. In other cases constipation terminates with diarrhœa, and an alternation of diarrhœa and costiveness, which lasts from two to six days, is a constant and habitual state with the patient. In cases of constipation resulting from this cause, the constipation seems to depend upon a want of muscular tone in the intestines; peristaltic action is deficient, and the appearance of the evacuations is in all repects natural, and their consistence proper. In other cases the secretions are deficient, and the stools are dry, hard, and small in quantity. But constant diarrhœa and irritable bowels are also frequent accompaniments of uterine disease. The passages may be profuse, watery, and exhausting, or profuse and fecal. A peculiar kind of discharge in cases of diarrhœa in uterine disease presents a muco-fibrinous cast of the intestines. The casts are sometimes quite tenacious and of variable length, from two to ten inches, and are often complete casts of the intestinal tube; at other times there are shreds of false membrane of irregular shape and size. The discharge of these substances is usually attended with some dysenteric symptoms. The diarrhœa sometimes seems to be excited or aggravated by certain articles of food; at other times one kind of ingesta seems to agree as well as another; and, again, the bowels may be quite regular, except at or near the period of menstruation. The irregularity is often entirely confined to that time. With or without diarrhœa there may be tumultuous gaseous commotion in the bowels; they may be more or less distended, or without distension there may be annoying borborygmus and motion, from the gas passing from one part of the intestines to another, inducing the opinion that pregnancy exists. The gaseous distension of the abdomen is sometimes so extensive and permanent as to induce the overwilling patient to believe that it is caused by gestation, and being frequently connected with hysterical craftiness, she may impose the same belief on a careless practitioner.

Sympathetic Affection of the Liver.

Closely connected with and, of course, very much influencing the condition of the alimentary canal, is the condition of the liver. Sometimes the bile is poured out in such copious quantities as to induce full and free discharges of it from the stomach by vomiting, and to stimulate the intestines to copious bilious diarrhœa when they are not irritable, but subject to the ordinary stimulation of ingesta. This overflow of bile comes in paroxysms, and produces a sort of cholera morbus. When it occurs only once a month, it is apt to be near the time of menstruation, or it may return several times between the monthly periods. But there is often a persistent absence of secretion for a time, or this condition may alternate with the other; or the bile, instead of finding its way into the alimentary canal, may pass into the circulation and give the skin a jaundiced hue. When the functions of the liver are seriously disturbed, there is apt to be at one time a deficiency of bile, and at another a great redundancy. I have not seen this organ congested to any great extent, as observed by Dr. Bennett. But I have seen an enlargement of the spleen in such instances, though I have not supposed it to be the result of the influence of uterine disease. When copious effusions of bile take place somewhat suddenly, all the pain and spasmodic action observed in bilious colic are likely to present themselves.

Sympathetic Affections of the Nervous System.

Much more distressing if not more serious suffering is experienced in the nervous system than in the digestive apparatus. Aches, pains, and complaints of evident nervous ailments are the peculiar province of uterine disease. There is hardly a disagreeable or even excruciating sensation that these patients do not experience; and too often this real suffering is mistaken by the friends for imaginary, and the patient's complaints are treated with unreasonable impatience and rudeness by persons from whom she ought to receive kindness and sympathy, because her appearance does not correspond with her morbid sensations, as we are apt to observe them in other examples of disease. It is remarkable, too, and a fact that often impeaches them with insincerity in their complaints,—when the uninitiated are the judges,—that these patients will pass from a state of excruciating suffering and loud complaints, under a little excitement, to one of actual enjoyment and hilarity, or conversely. The transition from the excitement of private company, or a public party, gives way in a few minutes to a doleful condition of suffering and unappeasable complaints. The inconsistency of the complaints and enjoyments, the incapacities and the performances of these patients, are almost characteristic,—at least in their sudden alternation,—and are inexplicable in any other way than by supposing that the pains in the different organs, to which they are referred, are more dependent upon the general nervous susceptibility than upon the organic disease of even trivial character. They are strictly neuralgic in their nature, and confined to the nerve-matter or tissue of the parts. A great number of the disagreeable sensations and pains appear more frequently in particular parts, and hence may be distinctly referred to in this description.

Accompanying Manifestations of Moral and Intellectual Perverseness.

During the spasmodic action which, in the majority of cases, has to a critical observer the appearance of being partly voluntary, there is apt to be a singular perverseness of moral and intellectual manifestations, which was on a certain occasion very graphically expressed by a clerical friend in speaking of a patient, by saying that she "seemed to be actuated by an evil spirit." In the midst of great suffering, patients not unfrequently try to bite and otherwise wound those who endeavor to restrain their violent agitation; they attempt to throw the covering from them with the apparent object of exposing their person, or say some very perverse things. At other times they attempt to imitate the symptoms of some grave organic affection. One patient, by heaving up the lower part of the chest spasmodically at rapidly succeeding intervals, induced her friends to think that she had violent palpitations of the heart, and therefore must be the subject of cardiac disease; she also imitated throbbing of the temples by spasmodic contractions of the temporal muscle. When this throbbing of the temples was very violent, I requested her to hold her mouth open so as to relax those fibres, but she looked up and said very wicked things, and became contemptuously calm. A request to hold her breath when the palpitations were violent, induced her to act in the same way, and caused an instantaneous cessation of them. The great peculiarity in these spasms has always seemed to me to be a guarded cunning, a deceitful and perverted consciousness. To a close observer this is always easily detected. By using the foregoing epithets descriptive of the peculiarity of this kind of hysterical phenomena, I do not wish to be understood as saying that deceit, cunning, etc., are indications of freedom from disease on the part of patients who are thus affected. I think this is not usually the case, but that they are the result of the morbid state of the mind and body. The spasmodic action of the muscles is not contemporaneous in the corresponding extremities, as in epileptiform hysteria or epilepsy, but is so irregular as to move the body in many different directions instead of giving to it frequently repeated similar motions.

Syncopal Convulsions—Hystero-Epilepsy.

There is a singular variety of semi-convulsions, or syncopal convulsions, which I have noticed in a few cases, that I do not remember to have observed in any other connection. They occur very frequently after they have once seized the patient, as often as three or even six or eight times during the twenty-four hours. They take place in the daytime or at night, during the sleeping or waking condition, and do not seem to result from any particular excitement at the time. If the patient is sitting and talking, or is engaged in work, she suddenly ceases and slowly sinks down to the floor; she turns her head to one side, almost ceases to breathe, becomes pale and trembles, sometimes very gently, sometimes violently. This state lasts only for a few seconds; she arouses, looks about confusedly, and although she knows she has had a fit, as her friends call it, she does not remember distinctly anything which passed during the time. As these attacks become chronic, they may be attended with very slight convulsive movements, frothing at the mouth, and sequential somnolence; but, ordinarily, this is not the case. If the patient is attacked in the night while asleep, unless some person observes the attack, it will not be known to have occurred, the patient being unconscious of it. There is generally, however, movement enough to awaken anybody who may be in the same bed with the patient. In all cases of this kind I have noticed great impairment of memory, particularly of recent circumstances. There is not usually any severe pain in the head or spinal centres; there is, in fact, no prominent painful circumstance apparently connected with the case. Patients having such paroxysms are generally worse at or near the time of menstruating; but sometimes they are quite exempt from them at this time, but have them not long after the menstrual congestion is over.

Moral and Mental Derangement.

No more constant derangements, perhaps, occur than are observed in the mental and moral qualities of the patient. The patient loses the complete control which she has been in the habit of exercising over her emotions, and finds herself becoming despondent, fretful, suspicious, and unsteady in her purpose; whimsical, having desires not before experienced, indulging in thoughts and feelings toward her friends which in her former days she did not entertain. She will often call herself a changed woman. If the source of irritation is not discovered and removed, she loses her strength of will entirely; and, instead of her moral feelings being guided by her will under the influence of a sound judgment, she exhibits indecision, and wavers in matters about which she heretofore had no difficulty in making decisions. She finds herself giving way to peevishness to a frightful degree; nobody can please her. In place of her usual satisfaction in the attention of her friends, she finds fault with their efforts to make her comfortable. Sourness, moroseness, jealousy, carelessness, timidity, and peculiar perverseness change her nature entirely. Sometimes one class of ideas will seize her whole faculties, and she will scarcely think or talk of anything else. She has no patience with anybody who will not listen to her, and believes everybody to be her enemy who cannot sympathize with her in her imaginary troubles. The different phases of mental and moral troubles under which the patient labors are almost innumerable. As will be seen, this state of things closely borders on insanity, and there is no doubt that insanity is often the result of uterine irritation in patients who are hereditarily predisposed to it. I think I have seen cases of insanity that were excited into activity by the great nervous irritation connected with uterine disease. But in place of this steady deviation from her natural mental condition, the patient may generally be sane, and show an abnormal state of mind only when circumstances occur which are likely to excite her, when she loses all control and indulges in excessive anger. Sometimes, in a fit of despondency or melancholy, she contemplates or even attempts suicide. Or, if her sense of wrongs weighs heavily upon her, and no means of redress shows itself, she thinks seriously of fleeing from what she fancies is the cause of them. Still another sort of paroxysm exhibits acts of a depraved and indecent nature, so disgusting as to shock the witnesses of them, and in her recollection of them to mortify her exceedingly. The common hysterical paroxysm of crying without a sufficient cause, the indulgence in unbecoming and unseemly levity, rapid alternations of despondency and hope, need hardly be mentioned, from their familiarity to every observer. When, in reference to such unbecoming exhibitions, patients are kindly remonstrated with, they will, in general, acknowledge the impropriety of them, but will end with saying, "I cannot help it," which is the unanswerable and, doubtless, truthful exposition of their mental condition. Neglect of duty in all the relations of life is one of the phases of their mental state. Sometimes a wilful selfishness, caring for nothing but what they fancy will make them happy or conduce in some way to their interests, absorbs their whole mind and governs all their actions. At times there is an intelligent appreciation of the impropriety of their actions.

Cephalalgia.

Cephalalgia, in some form, either partial or general, is a very common attendant upon the nervous susceptibility of uterine patients. It is often general; the whole head seems to pulsate and thrill with terrible pain, rendering the patient almost frantic with the intolerable aching. In a few hours it subsides, leaving the nervous energies prostrate for a short time, but otherwise the patient is free from all pain. This subsidence would not be complete if the cephalalgia were anything but nervous pain in the head. The general cephalalgia is often, but not necessarily, attended by nausea and vomiting, or other stomachic, hepatic, or intestinal disorders, and may be relieved, when that is the case, by emesis or an alterative cathartic. This is what is commonly called sick headache. The most frequent forms of pain in the head, however, are partial, and confined to some particular part; as hemicrania, confined to the whole of one side, or a lancinating pain in the temple, brow, or eye. All these are very common pains in uterine disease; but persistent or frequently recurring pain in the occipital region, or on the summit of the head, is nearly pathognomonic of uterine disease. It is almost invariably the case that a woman has chronic uterine disease if she complain of persistent pain in either of these regions. The occipital pain I have observed in this connection much oftener than the pain on the top of the head. It is, ordinarily, a dull aching, that completely unnerves the patient and renders her unfit for her duties for days together; it is usually very persistent, in some patients being almost constantly present, but in other cases only occurring once a month, ordinarily at the menstrual period. The pain on the top of the head is described generally as a burning pain; patients complain that they have all the time a hot place on the top of their heads. This pain is probably more constant in patients that have it than any other about the head. I have observed that when patients suffer greatly from pain in the head, they complain less of suffering which is more directly referable to the uterus than when any other symptom seems to predominate. Indeed, I have met with patients who were martyrs to these excruciating headaches who did not complain of anything which pointed directly to the uterus as the origin of their sufferings, and yet upon examination that organ was found ulcerated and inflamed; and when these conditions were cured by appropriate treatment, the headache ceased to annoy them. A remarkable instance of this kind occurred to me several years ago. The patient came to town to consult me about what she called neuralgia. The pain was located in the occiput; it lasted one week in every four (her menstrual week), and when very severe she had hysterical convulsions. This took place at almost every recurrence of the headache. She had no backache at any time; her menses were natural in every respect, as far as I could gather from her history, on which I placed the more reliance from the general intelligence of the patient. She could walk long distances without inconvenience, had no pains in the hips, groins, or legs; in short, she made no complaint from which I could infer the origin of the nervous suffering to be in the uterus, except that the headache was sure to come on at the time of menstruation. Her uterus was ulcerated and inflamed, and after appropriate treatment was cured, when the sufferings vanished, and she has since enjoyed complete immunity from them. This woman was about thirty years old and in the midst of her childbearing period, and it might hence be supposed that the uterus would exercise more sympathy than at any other time of life; but, as the following case will show, this is not the fact: Mrs. ——, forty-nine years of age, had ceased to menstruate three years before I saw her, but was subject to the most excruciating headache every six or seven days, each attack so prostrating her that she would scarcely recover from one before the next would appear. She had some backache and inconvenience in walking, but these symptoms scarcely attracted her attention amid the terrible sufferings caused by her headaches. Six months' treatment addressed to the uterus alone sufficed to remove all this great trouble and render the woman comfortable and capable of her duties in life. The overwhelming influence of this terrible cephalalgia on the nervous system seems to occupy so completely the capacities of it that minor pain is unheeded, and no cognizance is taken of the sufferings of the less sensitive but inflamed and mischief-making uterus.

Affections of the Spinal Cord.

The spinal cord seems to partake very much of the sensitiveness of the nervous system, probably more so than the brain. Pain in some portion of the spine is almost universally present in uterine disease, but is most common in the sacral and lumbar regions. Pain is so general in those regions that it has come to be regarded as necessary, in the estimation of very many persons, to establish the probable existence of this affection. The pain is fixed and almost constant, but aggravated by anything that excites the uterine vascular system, as standing or walking for a long time, lifting or jumping, or sudden emotions. Fright, anxiety, or anger, as the patient says, "flies to the back" and aggravates the pain. It is especially apt to be worse during the menstrual congestion. Sometimes walking so much increases it as to incapacitate the subject for that kind of exercise. An expression often made use of to signify sensitiveness of the back, is "weak back." Women will say, "I have not exactly pain in my back, but it is so weak that I cannot move on account of it, or can hardly stand, or cannot arise from a stooping posture." The pain may be fixed in any part of the spine. I have a patient whose backache is at the junction of the dorsal and lumbar regions. In connection with these pains there is often tenderness in the same region, so that pressure causes great complaint. The pain is not only increased in the part pressed upon, but it sometimes darts along the nerves around the body.

Hyperæsthesia.

Akin to pains in various parts is hyperæsthesia without inflammation; great sensitiveness of particular parts. Tenderness of the scalp is often complained of. The whole surface of the head is so tender as to require great care in dressing it, and no pressure can be tolerated without an effort. Of a similar nature is tenderness along the spine. The different spinous processes in some sections of the column cannot be touched without giving the patient great suffering. Pressure upon these tender vertebræ sometimes causes pain to shoot along the spinal nerves, passing out of the intervertebral foramina in the neighborhood. There is occasionally, also, general tenderness of the abdomen.

Anæsthesia.

Much less frequently there is anæsthesia of some particular parts. The patient complains of a want of the ordinary sensitiveness in them, or there is a feeling of numbness, which lasts for some days, and which recurs so often as to obtain the distinction of a symptom of the case.

The muscular through the nervous system is, in many cases, very seriously affected. Cramps and spasmodic action are very frequent in particular cases, and they are confined almost constantly to certain limbs. They occur more frequently in the lower than in the upper extremities.

Spasms.

A worse state of things, however, exists when there are general spasms of the limbs and abdominal walls and hysterical convulsions. They are apparently induced by fatigue, or occur at the time of menstruation. The patient, after complaining of severe pain in the stomach, falls into a state of general convulsions, which lasts from thirty seconds to some hours, and subsequently sinks into a state of quietude, but not of insensibility. These attacks are usually repeated several times and then subside, leaving the patient in the possession of her usual physical condition, which is one of nervous misery.

Sympathetic Pains in the Pelvic Region.

Painful localities are generally found about the pelvis, in the inguinal or internal iliac region exceedingly common. Immediately above one of the groins a constant and fixed aching may be found, which is aggravated by all the circumstances that increase the pain in the back. Most generally there is some tenderness or soreness in the part, which is increased by pressure. The pain sometimes extends to the hip and side of the pelvis. It is much more frequent in the left side, but is often confined exclusively to the right, and less frequently it is in both sides alike. In more rare instances the pain is centrally situated behind the symphysis pubis.

Extension of Inflammation to the Bladder and Rectum.

The patient will often say she has pain in the bladder, or pain in the rectum, and believes that these regions are affected. The two last pains, when complained of, are generally very appropriately stated to be in the bladder and rectum, and are indicative, for the most part, of an extension of inflammation to these two organs. When this is the case, pain accompanies or rather is increased by micturition, or may occur immediately after it. The same remarks are applicable to the alvine discharge; during defecation the pain is increased, or then only occurs. These pains are not, strictly speaking, sympathetic, but occur as consequences of the extension of inflammation, and indicate correctly its locality. In the iliac region it sometimes extends up the side as far as the mammary region, or there may be pain in this latter place not connected with the former. The pain may likewise be situated between these localities and be independent of any pain in them.

Affections of the Sciatic and Anterior Crural Nerves.

Pain in the course of the sciatic, obturator, or anterior crural nerves, is very common in uterine affections of an inflammatory nature. It is often so severe and aggravated by exertion as to incapacitate the patient for walking. Particular motions cause pain according to the nerve affected. When the sciatic is the seat of pain, sitting down, especially on a hard chair, increases it, so that the patient resorts to cushions for defence against pressure. Pain in the course of one or more of these nerves is often the most distressing circumstance connected with the case, and it is often treated as neuralgia seated in the nerves, while the cause is not even suspected. The pain may occupy the whole length of the nerve, or it may be confined to its upper or lower parts, or to an intermediate portion of variable length. The part of the limb traversed by the nerve may be tender or not; most frequently there is no tenderness. The pain may be fixed, or darting and transitory. It may be constant or paroxysmal; the patient may enjoy immunity for hours and days, or even weeks, or she may be a constant sufferer from them. They are apt, as other pains are, to be greater during menstrual congestion than at any other time. The pains emanating from the pelvis are not sympathetic, nor are they probably reflex; but they are caused very likely by pressure of the uterus, or they may be produced by an extension of the inflammation to the nerve-sheaths.

Muscular Weakness.

Extreme muscular weakness—I do not mean that which results from general debility, but of some particular set of muscles—is often present as an accompaniment of uterine disease. This is most frequent in the back and lower extremities, not often in the upper extremities. It is probably imperfect innervation of the part, or it may be some affection of the muscles themselves. I have been inclined to look upon it as partial paralysis, resulting from reflex irritation. More or less numbness of the parts exists in connection with the weakness of the muscles.

Circulatory System.

The circulation and its organs are very often deranged to a distressing degree. Palpitation of the heart is often troublesome, and patients are apt to think themselves the subjects of disease of the heart. We are often consulted solely with reference to this symptom, it having absorbed the attention and awakened the apprehension of the sufferer to such a degree that her other inconveniences were forgotten or overlooked. These palpitations are sometimes attended with pain in the region of the heart, which occasionally shoots up to the left shoulder and down the left arm to a greater or less distance, the distress being so great as to amount almost to angina. The palpitation is worse during nervous excitement. It occurs generally in paroxysms. We meet with instances in which it oftener occurs after lying down at night than at any other time. Sometimes it seems to be increased during digestion. The *sensation* of palpitation does not seem to be at all commensurate with the increased excitement of that organ, and *vice versa*. I have observed instances in which the patient complained of violent palpitation, while the pulse and heart, as far as I could judge, were not at all disturbed. In such cases we might say that the sensitiveness of the heart was increased until its ordinary motions were perceived by the patient. Indeed, the pains and increased irritability of the organs supplied with the great sympathetic nerve seem to result from increased susceptibility or sensitiveness instead of organic changes. There is also sometimes a sensation of throbbing, as though the blood was passing through the arteries in increased quantities, and with increased force in some parts of the system; this occurs mostly about the head, sometimes in the hands and feet, and occasionally inside the head, apparently in the brain; also about the genital organs. Great irregularity of distribution of the blood is often observable, the hands and feet being uncomfortably cold, and continuing in that state for twenty-four hours at a time. In connection with cold extremities, the head is apt to be hot, or warmer than natural; this heat of the head may also be present when the feet and hands are of the common temperature. The heat about the head and face is sometimes almost constantly present in certain patients, and is the source of great annoyance to them. It is apt to be caused by anything that excites the person. The heat is greatest and frequently exclusively located on the top of the head. I do not think that this sensation of heat arises from any other cause as frequently as from uterine disease, and I am sure it is one of the most common symptoms in such disease. There is great heat complained of in the back of the head also, in many instances, and sometimes it extends along the spine, affecting the whole or only sections of it. Burning in the sacrum and loins is very common. Flashes of heat and flushes of color in the face and head, and even in other parts of the body, are very common and annoying occurrences. The power or nervous energy of the heart may be impaired to such an extent as to render the patient liable to faintness from very slight causes,—anger, fear, surprise, or even the more tender emotions, overcoming the patient very readily.

Respiration.

The respiratory apparatus is not so frequently or so severely affected as some of the rest of the organization, and yet we often meet with some very curious and considerable deviations from the natural condition of its functions. The constriction about the throat, or the feeling as if a ball rose to the throat and obstructed respiration, and the feeling as if smoke or dust was in the air which the patients breathe, are complaints we hear almost every day. All these sensations, or any one of them, may be aggravated to an agonizing degree, inducing the fear that the paroxysm may be fatal, and causing the patient to suffer for some moments, and sometimes for hours, the horrible sensations of impending suffocation. The breathing may be spasmodic from painful and unnatural contractions of the respiratory muscles. There may also be pleurodynic pains during each ordinary effort of respiration. Imperfect respiration, or partial inflation of one lung, or of parts of the lungs, occasionally occurs. The modification of the respiratory murmur arising from this imperfect inflation of one of the lungs I have observed on several occasions, and not without serious apprehension of the result; but in all cases where this was the only modification of physical sounds, the patients have done well, and the inflation improved as the returning nervous energy of the rest of the system was established. The respiration is not often hurried as a constant circumstance, but occurs temporarily as the effect of excitement from mental or moral emotions. In some cases, amid the tumult of nervous excitement during a paroxysm, I have seen the respiratory efforts increased to sixty in a minute; and, occasionally, these nervous patients constantly have increased frequency of respiration. There are cases in which cough is a very constant symptom; it is a peculiar, nervous cough, as a general thing, and is excited or made worse by anything that renders the patient more nervous. Sometimes it is difficult to distinguish it from the coughs which arise from insidious affections of the lungs. It is possible that the coughs arising from slight lung difficulties may be aggravated by the nervousness consequent upon uterine disease. I once saw a patient affected with a peculiar nervous cough, as the effect of uterine disease, which sounded like the barking of a small dog, and the sound was made at every expiration during the waking condition of the patient, except when the mind was intensely occupied. She was an intelligent young married woman, about twenty years of age. While her whole attention was absorbed, she forgot to cough, but as soon as her attention was relaxed, she habitually produced the same sound. This had lasted when I saw her six months or more. When she was embarrassed by a conversation which related to her case, the sounds became much louder and persistent, appearing in perfect synchronism with every respiratory effort. I must further add that I did not have an opportunity to treat this patient, nor have I heard from her, so that I cannot give her subsequent history; but the rest of the symptoms plainly indicated uterine suffering, and an examination established the fact that she had ulceration and inflammation of the neck of the uterus. She had never borne children or miscarried.

Sympathy of the Excretory Organs.

The excretory organs also sympathize with the uterus, particularly the kidneys. It has been for a long time observed that female patients, in a state of nervous excitement, secrete a large quantity of urine, which is usually limpid, almost odorless, and insipid. These qualities are most likely dependent upon the amount of water being so much greater proportionately than the salts; these last scarcely seem to be present at all. It is extremely dilute urine. Uterine patients are very prone to large discharges of limpid urine. This kind of alteration in the functions of the kidneys is, doubtless, indirect, and does not occur except in connection with a greatly excited condition of the nervous system as the medium between the kidneys and the uterus. More considerable deviations, however, are apt to take place; the salts are likely to be increased in quantity compared to the amount of water; or one sort of the salts may be greatly over or under the proper proportions in relation to the others. The urine may be decidedly morbid in its composition. It is probable, too, that the deviation is secondary to derangements of the stomach and liver, but, nevertheless, it is often present. The urine may be highly alkaline, or highly acid in reaction, showing the production, to an unusual degree, of salts having such chemical qualities. The presence of the salts in excess, whether of the one kind or the other, is pretty sure to produce painful micturition and other disagreeable sensations, as burning and smarting in the urethra and bladder. There is no doubt, however, that the painful and disagreeable symptoms may arise as the more direct effect of inflammation of the uterus when the urine is correct in composition; hence the examination of the urine will be necessary to determine the cause of the symptoms. But the urine is often secreted in very diminished quantities in cases of uterine disease, and that, too, without apparent general febrile excitement. Patients frequently complain of this symptom. Whether there is an increase in the excretory functions of the skin at such time I am unable to say. The skin is probably not very much affected in its excretory capacity as a general thing, but some very curious deviations have been observed.

Mammary Bodies.

More direct are the effects upon the mammary bodies. They are often highly excited by uterine disease; this is no more than would have been expected from the close sympathetic relations between these organs. Congestion is the most common sympathetic condition. The mammæ increase in size, become hot and painful as a general thing, but sometimes there is no change in their sensible or sensitive conditions. The appearances are natural, but the patient complains of a peculiar and painful condition, not unlike the sensations perceived during the suppurative stage of inflammation; but there is neither tenderness, nor swelling, nor heat, nor other deviation than the unnatural sensation. Sometimes the breasts are really inflamed. The lymphatic glands in the axilla, and from the axilla to the border of the mammæ, in some cases, become affected at the same time; in other instances, however, they do not partake in the sympathies of the mammæ. They also become tender in some cases when the mammæ do not seem to be excited.

I have dwelt so long on these general symptoms, and have made so much of uterine sympathies, that I am forced to recall an expression made use of in a notice of Professor Hodge's work on *Diseases of Women,* that "if all this is true, it is almost a pity that a woman has a womb;" but I have fallen very far short of mentioning all the sympathetic evils resulting from chronic diseases of the uterus, and I only design this as an outline view of a subject that will fill itself up in painfully warm colors in the observation of those who devote themselves to a close study of the diseases of women. While this is my conviction, I do not wish to be understood as saying that nearly all of the above symptoms will show themselves even in a majority of cases; some of them will be prominent in some cases, others in other cases; and in rare instances we meet with nearly all of them in some sufferer, and in nearly all chronic cases we shall find enough to move us to commiseration for the ruined health of women thus affected. I know there are thousands of my peers in the profession who do not see in the foregoing array of symptoms any indication of disease of the uterus, and when uterine diseases are obviously coexistent, they are not arranged in the order of sequency. This does not shake my faith in the facts I have observed for myself, nor disturb my judgment, formed from an observation of a very large number of cases carefully watched through all stages of progress to their termination. That all the above symptoms may occasionally be present in cases in which the uterus is healthy, I have often observed; but that they are also present as the proximate and remote effects of uterine disease, I am well satisfied. Another well-established fact, according to my judgment, is, that the direct symptoms referable to the uterus may be feebly pronounced, while some, or even a large number, of the sympathetic disturbances are very prominent; and, judging by the freedom from pain and other inconveniences in the uterine region, there are even cases in which the uterus does not seem to suffer at all. These cases are well calculated to mislead us, and to induce the opinion that the womb difficulty is of minor importance, and need not be the object of solicitude until we get rid of the more troublesome and prominent symptoms. We cannot be too careful in our consideration and management of this class of cases, and while we adopt judicious remedial means for the removal of the more afflicting symptoms, we must address ourselves to the disease of the uterus, however slight it may appear to be. I have seen too much good result from the observance of this direction not to dwell with emphasis upon its importance. The cure of the uterine disease will be a valuable diagnostic measure in such cases. Not only may there be a great difference, or want of correspondence, in the severity of the local and general symptoms, but in many cases in which the general symptoms have almost made a wreck of the health and happiness of the patient, the local inflammation and ulceration will be found upon examination to be trifling in amount and degree. The inflammation may be very slight and the patient suffer very greatly from it, either generally or locally, or both; or the ulceration may be extensive and the inflammation very considerable, and yet the patient hardly be sensible of any inconvenience whatever from its presence. This statement will be confirmed by careful observers in this field of research. This, however, will prove a stumbling-block to those who entertain the opinion that uterine disease is of small importance in the consideration of woman's ailments. They seem to think that there is of necessity an exact and invariable seeming correspondence between the magnitude of cause and effect, and they point to these cases and say, the symptoms were present, but a very trifling, if any, uterine disease showed itself upon examination; or, they will say, there was great ulceration, but the patient did not suffer from its presence, at least not in proportion to the amount of local disease. I need not particularize instances in which other diseases are comparatively latent, or cases in which the symptoms are unduly severe compared to the amount of actual disease, as they will suggest themselves to every intelligent practitioner. But, recurring to the sympathies of the uterus, we find that while some patients are not affected at all by pregnancy, and others favorably affected, their health being better then than at any other time, that some absolutely perish on account of the functional derangements inaugurated by pregnancy; and, as is shown on a former page, organic diseases are not unfrequently lighted up. We shall probably always be at a loss to understand precisely this difference; but there can be no doubt that it is more on account of constitutional differences than local ones. The concatenation of sympathetic influences may be caused by the greater susceptibility of the organs secondarily affected. In fact, the only mode of accounting for it is by supposing this increased susceptibility. I am convinced that this great but inexplicable diversity of sympathetic effects is as likely to result from uterine disease as from pregnancy. We must, therefore, expect a very great range of difference in the extent of sympathetic derangement from uterine disease. It is interesting to observe the rise and development of the sequences to diseases of the uterus. How far can the uterus produce a direct effect in creating this large amount of sympathetic disorder? Are most of the symptoms produced by the direct sympathetic relation of the uterus to other organs, or does the diseased uterus first affect some other more influential organ detrimentally, and then this last the organism generally? I am inclined to think, from a large observation, that the uterus has close sympathy with only a few organs, and no one probably is so powerfully affected by it as the stomach. It is the first organ affected in pregnancy, being brought into a morbid condition in a very few weeks. The well-known, powerful, and almost universal sympathetic influence exerted by the stomach upon other viscera is sufficient, when it is diseased, to account for the great variety of subsequent symptoms. The stomach is the great centre from which radiate abdominal, thoracic, cerebral, and spinal disturbances almost *ad infinitum;* and there can be no reasonable doubt that it is an active agent in originating the disturbances of the great vital organs. The subject of the sympathetic influence of the uterus then becomes the more interesting and important, from the fact that a very slight deviation from its ordinary condition arouses the most influential of all the organs to a state of disease, which depresses the functional energies and increases the susceptibilities of almost all the rest of the organism. In addition to the chain of sympathetic susceptibilities produced by this state of the stomach, frequently the digestive powers of that organ are impaired or perverted, so as to supply the chyme in deficient quantities or in deteriorated quality, and in this way injuriously affect the composition of the blood, inducing anæmia or oligæmia. Imperfect nutrition will follow, as a matter of course, in the one case, and perverted nutrition in the other, so that emaciation or obesity will be ordinarily present. Another organ, probably, in direct sympathy with the uterus is the cerebellum, as it seems to me to be as frequently affected as the stomach. The mammæ are, of course, in direct sympathetic relation with the uterus, and yet they are not uniformly affected in all cases when the uterus is very seriously diseased. I do not believe that we are able to say at present whether there are other organs that come directly under uterine influence. A proof of the powerful and very ready effect upon other organs, of irritation of the uterus, may be found in the fact, that very often when the patient is in a condition of comfort, so far as her general suffering is concerned, an application of nitrate of silver to a morbid os uteri will give her excruciating pain in the head, render her exceedingly despondent and irritable, and very much aggravate the symptoms with which she is affected. This I have so often observed to be the case that I cannot but regard it as one of our diagnostic means. After such an application, the patient will generally complain of an aggravation of the general symptoms, whatever they may have been, and say that all the pains are made worse by the application of the caustic. When an organ has been the subject of irritation or functional derangement for a long time, in consequence of sympathy with the uterus, it may become the subject of organic disease, which may continue as an independent affection of, perhaps, a dangerous character; or, if organic has not succeeded to functional disease, the power of habit, which is so frequently thus engendered, will perpetuate morbid action for an indefinite period after the cause of it has been removed.

LOCAL SYMPTOMS.

Pain in the Sacral or Lumbar Region.

Pain in the sacrum is one of the most constant, and when persistent indicates, with a good deal of certainty, disease of some kind in the pelvis. The pain in this region, caused by the diseases of the uterus, is ordinarily central, being in the middle of the sacrum at its lower extremity. It is sometimes at its upper extremity, or it extends the whole length of the bone. Not unfrequently a painful spot may be found on one side, over the sacro-iliac junction. Some patients describe the pain as if a bundle of nerves were pulled upon from the inside of the sacrum, and others describe it as an aching or burning pain. Accompanying the pain in the sacrum is often a sense of soreness upon pressure, an inability to sit with comfort, on account of the tenderness of the lower part of the sacrum.

Pain in the Loins.

Pain in the loins is probably not so common as that in the sacrum, but is quite as various in its nature. Very frequently there is great weakness in the loins, so great in degree sometimes as to prevent the continuance of the erect posture for any length of time. I have had a number of patients who were unable to stand long enough to dress their hair on account of a weak back.

It is remarkable that patients often feel this weak back more when standing than when walking; and they are sometimes able to walk a distance without any great inconvenience, but as soon as they stop, the weakness is apparent to a distressing degree.

Inability to Walk.

Ordinarily the weakness disables the patient for walking. The pain in the back is almost always increased by walking or standing, and on this account the patients avoid being on their feet, although the back is strong enough. But there are many patients who have severe disease of the uterus, who do not experience any of the inconveniences in the sacrum and loins already described; but some of them are very generally present.

Great pain in the back, closely resembling that arising from a diseased uterus, is also caused by hæmorrhoids, prolapse, or inflammation of the rectum. The pain caused by diseases of the rectum, I think, is much more frequent on the left side of the sacrum and in the left nates or hip than in a central position; in fact, I have come to regard pain, confined to the left nates and hip, as indicating, with considerable probability, rectal disease, and I always inquire into the functions of that organ when such pain is present. It differs in position from the pain in the iliac region, so common as the result of uterine disease. It is situated near the sacrum, and more in the side of the pelvis than the latter.

Pain in the Iliac Region.

Pain in the iliac region is very common. In frequency it is next to pain in the back. The pain is commonly situated a little anterior to the superior spinous process of the ilium, and below the level of it. It is not referred to the iliac bone, or fossa, but to a place a little above the groin. We often meet with it on both sides, but much more frequently on one only; on the left side much oftener than on the right. Dr. Dewees considered pain in the left groin, or a little above it, as almost diagnostic of prolapse of the uterus. It is certainly very frequently indicative of inflammation of the uterine cervix.

Soreness in the Iliac Region.

This pain is generally accompanied with soreness upon pressure, and sometimes there is soreness upon pressure when there is no constant pain. Walking, standing, or riding generally increases it. A severe shock or strain from lifting will sometimes cause pain suddenly to appear in this region when it had not before been observed.

Pain in the Side, above the Ilium.

Instead of the pain situated as here described, there is often pain higher up in the side, or in the iliac fossa, or along the crest of the ilium, and even midway between the crest and ribs of the side. These pains are not in the ovaria, although they seem to point to the ovaria more directly than to the uterus, and are by some regarded as a symptom arising from ovarian inflammation. Dr. Bennett admits that it may be a sympathetic painful condition of the ovary. It is not material whether this is true or not; it is certain that it is very frequently present in uterine disease, and is almost invariably cured by remedies addressed to the uterus instead of to the ovaria.

Weight, or Bearing-down Pain, or Uterine Tenesmus.

Another indication of uterine disease, of less frequent occurrence, is a sense of weight in the loins or pelvis. This sense of weight is experienced in the loins and iliac regions more frequently than elsewhere; but it is often felt at the pelvis, and oftener in the perineal and anal regions. Patients express themselves as feeling a heavy weight dragging upon the back and hips, and others feel as though the insides were dropping through the vagina. Occasionally we meet with such urgent uterine tenesmus that the patient is obliged to keep the recumbent posture in order to enjoy any comfort. In such cases the patient in the erect position cannot resist a constant desire to "bear down," resembling the tenesmus of dysentery. This sensation is sometimes more distressing than any other symptom, and obliges the patient to desist from walking.

Leucorrhœa.

Leucorrhœa is one of the symptoms usually relied upon as an evidence of disease of the uterus. In the healthy condition of the uterus and vagina there ought to be no discharge; the vaginal canal is merely moist, and no mucus should make its appearance externally. When the mucous membrane is temporarily excited, there is more than ordinary secretion; but it ceases as soon as the cause of excitement passes.

We should *a priori* expect increased vaginal discharge to be accompanied with some form of disease, especially when it continues for more than a few days. Our knowledge of the discharge from mucous membranes lining the cavities elsewhere will afford us enough data to confirm these views. We do not expect to see a constant flow, however moderate it may be, from the male urethra when it is perfectly healthy; and we take gleet as an evidence of chronic urethritis, and it is generally the sequence of an acute attack of that disease. A constant discharge from the nose is an evidence also of more or less disease. It is just so with the vagina. The indications from leucorrhœa are derived from the color or consistence of the discharge, or both. The discharge from the vagina, resulting from mere excitement of the vaginal crypts, is thin, glairy, and not very tenacious. It is ordinarily acid in reaction. There is no color, and but little consistence to it. When a moderate excitement of the internal mucous membrane of the neck of the uterus produces a discharge of mucus, sufficient to appear at the orifice of the vagina, the discharge is white, not unlike milk, and when examined closely, will be found to consist of minute coagula swimming in a little clear fluid. When the mucus flows from the mouth of the uterus it is thick, and resembles very closely the albumen of an egg, and is alkaline in reaction. When it passes into the vaginal canal, it meets with the acidity of the vagina and is coagulated, and the whole changed from a colorless translucency to an opaque white. The reason that the coagula are small and so numerous may probably be found in the fact that the mucus arrives in the vagina in such small quantities; each coagulum represents a minute drop of mucus, changed in quality. As, however, the mucous membrane of the vagina furnishes only a small quantity of acidity, when this alkaline discharge from the cervix is copious it soon neutralizes the vaginal acid, and passing through this cavity unchanged, appears at the external parts possessing its characteristic qualities. We then hear the patient complain of a tenacious albuminous leucorrhœa; she will nearly always compare it to the white of an egg, but state that it is more tenacious. Unless the quantity is considerable, the mucus from the internal cervical membrane does not appear at the external orifice unchanged, but passes into this curdled condition. There is often a considerable quantity of this creamlike leucorrhœa in the whole length of the vagina, and hence it has been supposed by many that this is the vaginal mucus in its natural condition, and they have called it vaginal leucorrhœa.

Amount of Leucorrhœa not always Proportioned to Extent of Disease.

The abundance of this discharge is no criterion by which to judge of the amount of disease or its intensity, but it will scarcely remain colorless after the integrity of the membrane is invaded. When the albuminous fluid appears at the orifice of the vagina, there is persistent cervical disease almost of a certainty.

Yellow Leucorrhœa, when there is Abrasion or Ulceration.

The thick, white, or egglike albumen will be mixed, when there is ulceration in the cervix, to a greater or less extent, with pus, so that it will be stained yellow; if the quantity of ulceration is considerable and its surface is producing pus, the yellow will preponderate in the color, and sometimes the whole of the production becomes yellow. The yellow color may be in streaks through it, or intimately mixed with it, so as to stain it uniformly; or the pus may be mixed with the white, creamy secretion found in the vagina. Pus may be mixed with any of the varieties of leucorrhœa, and impart to it its tint more or less completely.

How is the Pain Produced?

How are the local, painful symptoms produced? Is the pain in the groin or ilium caused by prolapsus, and traction on the broad or round ligaments? I think not. Pain and sensitiveness in the ilium are so frequently present—when I cannot detect any kind of displacement, and so generally disappear when the inflammation or congestion is cured—that I am convinced displacement is not necessary for their production. They are of that character of pains which range themselves in the category of the vague, yet indispensable term, sympathetic, and are perhaps in the ovary; or, of the not less fashionable, yet equally indefinite term, reflex.

Bearing Down not always Caused by Displacements.

The sense of weight or bearing down in the pelvis is one about which there would, from its nature, seem to be no doubt as to its origin being in displacement. It gives the patient the idea that the womb is bearing with unusual weight on unusual places, viz., the perinæum, the rectum, or the bladder; and yet, in a great many instances, we shall fail to detect any deviation from the natural position of that organ; and, as soon as the inflammation is cured, the symptom vanishes without any treatment with reference to displacement. How can we account for this symptom? I think its explanation may be found in the fact that the pelvic organs, on account of the general pelvic, vascular turgescence, are unusually sensitive and receive painful impressions from contact, which, in the absence of these conditions, would have no effect in causing inconvenience of any kind. Moderate prolapse, retroversion, or other displacement, when unattended by congestion or inflammation, may exist for a long time without giving rise to any disagreeable sensation whatever. When the uterus is slightly displaced, with considerable pain and sense of weight accompanying this condition, the displacement is commonly considered to be the cause of the distress. When, however, the uterus occupies a normal position, and a sense of weight and pain still exists, it is regarded by most practitioners as the result of an "irritable uterus.' That the uterus is sensitive, "irritable," if the term suits better, there is no doubt; but that it is ever so without congestion or inflammation I do not believe.

Severity of Suffering not Commensurate with Amount of Disease.

The great error in the estimate of the importance of uterine inflammation is in endeavoring to measure the amount of inflammation by the severity of suffering, in assuming that because the woman suffers a great deal there must necessarily be extensive inflammation or ulceration. I believe I have seen more nervous prostration, more keen suffering, and have heard louder complaints from a small amount of endocervicitis than from extensive and obvious external ulceration. Pelvic congestion and increased sensitiveness of the viscera contained in the pelvic cavity, caused by a small amount of persistent inflammation in the neck of the uterus, calls into action, in an exaggerated and intensified form, all the sympathies which are excited by the uterus in its physiologically congested condition, and its persistence wears the more upon the general organism on account of the increased sensitiveness produced from day to day by virtue of its chronicity alone. It is anticipating what I shall say in the chapter on prognosis, to state that endocervicitis is not only more difficult to cure, but more destructive to the health and happiness of the patient than inflammation and ulceration external to the os. Indeed, we often find cases of extensive ulceration very apparent through the speculum, and consequently entirely unmistakable to the most careless observer, which produces less inconvenience than an amount of endocervicitis so small as to escape the attention of any but an experienced gynæcologist. This fact is perplexing, but the knowledge of it will cause a proper appreciation of what is apparently a trifling matter.

Effects on the Functions of the Uterus.

Having given the foregoing sketch of the general and local symptoms of congestion and inflammation of the uterus, I purpose to glance at the effects produced on the functional action of that organ. The first function assumed by the uterus and the last it continues is menstruation. It becomes a matter of interest to the physician to ascertain the cause of deviations in a function so persistent, so general, and so important to the health of woman. As hyperæmia is the cause of injurious and even destructive tissual changes and of functional aberrations in the vital organs much more frequently than any other pathological condition, so I think that the functional aberrations of the uterus particularly depend much more frequently upon it than upon any other cause.

Pain during Menstruation.

Pain during menstruation is not necessarily attended by deviation from the normal monthly flow. That there are varieties of dysmenorrhœa or painful menstruation, with unusual quantities and extraordinary kinds of discharge, is true; but, in many instances, the discharge, though accompanied with pain, is right as to its character and quantity.

Kind of Pain attendant upon Uterine Inflammation.

The kind of pain attendant upon uterine inflammation is, for the most part, the same in quality, but varying in intensity. It is a continuous sore pain, with heat in the parts, sometimes so slight as to give the patient very little inconvenience, and it varies from this to pain of great severity. The pain is at times sufficient to cause the patient to keep her bed for several days, and sometimes for the whole period of the menstrual flow; occasionally it amounts to agony, prostrating her by a paroxysm which may last for hours, or even several days.

Cramping Pain.

Instead of this continuous sort of pain, of varying intensity and duration, there are less frequently painful throes "coming and going," like labor-pains or after-pains. This kind of pain is often mistaken for colic. They are often very severe, and may last a few hours or several days. They may depend on some substance contained in the uterus, as shreds or membranes of fibrous exudation, and cease at their expulsion. But oftener no such cause can be discovered in the evacuations; nothing can be found but fluid blood, or coagula evidently formed in the vagina. In other cases the os uteri internum is small, and does not readily admit the passage of the uterine sound.

Effects of Partial Closure of the Os Uteri on Menstruation.

Many practitioners believe that this condition of the os internum, by preventing the ready flow of the blood, causes it to accumulate until the quantity is sufficient to arouse expulsive efforts for its extrusion. In a large majority of cases I have had the opportunity of observing, there was no coarctation; and in several of the worst cases I have met with, the os internum allowed the sound to pass with so much freedom that I could not distinguish its locality. It is also true that in many cases in which the os externum was not larger than a small pinhole, the patients menstruated without any pain whatever. By far the most frequent causes of dysmenorrhœa from obstruction I meet with are in connection with flexions of the uterus. I can easily understand that a sharp curvature in the cervix, or at the junction, will prevent the free efflux of the menstrual fluid. In such cases the pains resemble labor-pains, and are, doubtless, of the character of uterine contractions. The pain from inflammation may occur at any time during the menstrual flow, and before and after it. Not unfrequently a paroxysm of severe pain, lasting several hours or a day, warns the patient of the approach of the discharge, and subsides suddenly and completely, or gradually and incompletely, as soon as the discharge is fairly established. Frequently the pain continues during the whole time of menstruation, beginning shortly before or synchronous with the discharge, and subsiding with it, though in occasional cases it continues after it. We sometimes meet with patients who begin to menstruate without any suffering, but who have pain during the flow, or after its discontinuance. I think that a majority of patients affected with uterine disease have some pain during menstruation; but there are some who have none whatever, and pass through their period with little or no suffering.

Manner of the Flow modified by Inflammation and Congestion.

The manner of the flow is often modified. Instead of the continuous flow, commencing moderately, gradually increasing, and then as gradually declining, every manner of deviation almost may exist. With some, the discharge begins naturally, increases very rapidly, until at the end of twenty-four or thirty-six hours an average amount is lost, and then the discharge suddenly declines and ceases, or continues in very moderate quantity for a time longer, and gradually or suddenly stops. With others, the flow may begin and proceed naturally for a day or two, cease for one or two days, and then reappear and flow freely for a sufficient time. When menstruation proceeds in this way, it is generally attended with pain. These two varieties are more frequent than any other.

Duration of the Flow.

The duration of the flow may not be affected by it. The flow may continue three weeks or the whole month. This, however, is not frequent. It does not much affect the periodicity of return, of menstrual congestion and effort; but it is not unusually the case that we cannot distinguish the discharge which attends ovulation from the hæmorrhage which proceeds from an ulcerated surface, as hæmorrhagic congestion is so constantly present. We often meet with patients who are so confused by the frequent irregular returns of uterine hæmorrhage that they lose all reckoning as to the time for the menstrual return. Occasionally, continuous hæmorrhage is present. The most frequent deviation from regularity in menstruation consists in a slight anticipation of the time of its return.

Menorrhagia.

Menorrhagia, or hæmorrhage at the menstrual period, is not an unusual functional deviation. The hæmorrhage is often very considerable and continues after the usual period has passed by. The flooding is usually greater while the patient is in an erect posture, and it is greatly moderated by recumbency. Occasionally, however, it is not moderated by this means. It would seem probable, *a priori*, that menorrhagia would be the rule with patients affected with uterine inflammation, but such is not the case. I am not sure that even a majority of patients have it.

Menorrhagia frequent in Endocervicitis.

I have observed that menorrhagia occurs much more frequently in patients when the inflammation occupies the cavity of the neck; this also is the case with painful menstruation. All cases in which there has been either great pain or hæmorrhage, or both, for they are frequently coexistent, have been, in my observation, cases in which endocervicitis is the principal disease. Menorrhagia is not always the result of inflammation of the uterus, though inflammation is its most frequent cause; and in such cases it cannot be cured without first curing the inflammation.

Amenorrhœa sometimes Results.

Amenorrhœa is the least frequent of menstrual deviations as the effect of inflammation or congestion of the uterus; but this inflammation is frequently the cause of scanty menstruation. It is curious to note the manner in which this scantiness occurs. It seems to come on after the inflammation has lasted for a considerable time, and is almost always associated with sterility. In cases I have watched for some time, the organ was atrophied and rendered less vascular and erectile; probably on account of a deposition of fibrin throughout the general structures of the uterus. The scantiness is sometimes attended with irregularity, which consists in postponement or lengthened intervals. I treated one patient for endocervical metritis, in whom the uterus did not appear to be, as far as I could measure it per vaginam, more than one inch and a half in length, and correspondingly small in the other dimensions. This patient would menstruate sometimes only a day every month, and discharge but half an ounce of blood each time, and occasionally the discharge would not return for five, six, and even nine months. In early life her menses had been regular in quantity, quality, and times, and unattended with pain. She was barren, having never conceived, as far as she was aware. She dated the beginning of her disease from vaginitis during an attack of fever, which occurred two or three months after marriage.

Function of Generation affected by It.

The great function for which the uterus was formed, that of generation, seems very frequently to be disturbed by inflammation of the neck of the uterus. Some practitioners think, because a woman bears children with frequency, the uterus cannot be much diseased. This is unquestionably a mistake. I have known many women with extensive ulceration to bear children very frequently, but there is always great liability to embarrassment of the function in such cases. Conception may be entirely prevented by inflammation, or gestation may be arrested by miscarriage, or labor may be rendered difficult by it; and there is no doubt that many cases of sterility depend wholly upon inflammatory action about the neck.

Sterility.

Sterility is attended by different circumstances. Some women are sterile their whole lifetime; others, after having borne children to the full period and given birth to them, become sterile for years, or for the whole of their subsequent life; others again become pregnant soon after marriage, miscarry at an early period, and never again conceive. In many cases of sterility which I have had the opportunity of examining, I have found evidence of inflammation in the cervical cavity. Very often the inflammation is confined to this cavity. The history of these cases showed that congestion and inflammation had existed from the time of menstruation; these were cases in which conception had never taken place. In cases of sterility in which the women have become sterile after having once borne children, ulceration is usually situated around the os, extending upward into the cavity of the neck. This is almost certain to be the case if the woman has borne several children. When the patient has miscarried but once, there is not likely to be external inflammation to any great extent; but if there have been several abortions, the ulceration is apt to creep out and manifest itself upon the labia uteri, and sometimes becomes very extensive. Although the foregoing statements, with reference to the position and extent of ulceration in sterility, will generally be found to correspond with the appearances, yet we must not be surprised to find pretty extensive ulceration external to the os uteri in the originally sterile patient; and in those who have borne children and become sterile afterward, we shall sometimes find no external ulceration. The result of my observation is, that when sterility originates in uterine inflammation, it is in that form of it known as endocervicitis. Sterility often depends on the condition and quality of the leucorrhœa. In many of these cases the secretions from the vagina are very abundant and intensely acid, so as to produce irritation of the external organs. Although the semen is diluted and defended from the influence of acid vaginal secretions, by mucus of alkaline reaction, yet when these vaginal secretions are abundant and possess strong chemical qualities, they may destroy the vitalizing influence of the seminal fluid, and thus prevent fructification. Or the very thick, tenacious, albuminous fluid, which sometimes plugs up the os uteri and whole cervical cavity, may prevent the ingress of the spermatozoa, which, by their independent motion, according to present belief, penetrate the uterus, meet the ovum somewhere on its passage to the os uteri, and produce their fructifying influence upon it; and thus is precluded the possibility of effective insemination.

Abortion.

But conception may readily occur and pregnancy be complete, and after gestation has continued for a certain time abortion may take place. Abortion is a very frequent effect of inflammation and ulceration of the os and cervix uteri. The seat of inflammation or ulceration which most frequently induces it is inside the cervical cavity.

We find some patients who have aborted very frequently and never had a full-term child; others, who have had one or more children, but who miscarry every pregnancy afterward; and again, others who miscarry frequently and occasionally go to full term. It is not strange that miscarriages should result from this cause; *a priori*, miscarriage might be regarded as its necessary effect. Nevertheless, many patients bear children at term who labor under severe ulceration, and who are prostrated by the constitutional sympathies accompanying pregnancy.

Conditions of the Uterus in Abortion.

Two general conditions of the uterus exist as the effect of cervical inflammation, and are probably the proximate causes of abortion, viz., congestion or arterial injection of sufficient strength to cause hæmorrhage; and, perhaps, by means of insinuation of the clots, separation of the placenta, or irritability of such a nature occurs that contraction and expulsion follow conception; or, perhaps increased sensitiveness of the mucous membrane may increase its excito-reflex influence so as to arouse uterine contraction, and thus cause the fœtus and membranes to be expelled. When abortion is caused by congestion, it is apt to be ushered in by hæmorrhage. The hæmorrhage, after continuing for a varied length of time, from a few hours to several days, is followed by uterine contractions. When abortion is the result of increased irritability, the first symptom is contraction, with the paroxysmal pains attendant upon it. This continues for a time, when hæmorrhage and expulsion succeed. When abortion occurs once, it is very likely to recur in every subsequent pregnancy about the same time, until the disease is cured upon which it depends. While abortion is very apt to recur in the congestive or hæmorrhagic variety, it is generally not so exact in the time of recurrence. This variety, however, takes place more frequently at the time when the monthly congestion is present, while the other is independent of such influence. The probability is, that in the congestive variety the fœtus perishes before expulsive efforts arise; while in the other the fœtus is not affected until the contractions have continued long enough to partially separate the placental attachments. Whatever doubt, however, may exist in all this, there can be no question as to the injurious effect produced upon gestation by ulceration or inflammation of the cervix uteri. Mr. Whitehead, of Manchester, England, has written a book, full of information, almost solely to illustrate this consequence of uterine inflammation.

Effect upon Labor.

The effect which inflammation of the uterus exerts upon labor is not so apparent as upon the progress of gestation. Although I have watched patients whom I knew to be laboring under inflammation of the neck of the uterus in parturition, I have not been able to perceive any increase in suffering or tediousness.

Even when induration and hypertrophy were both of several years' standing, no ill effects from them, so far as I could see, attended labor either at full term or prematurely. I have observed cases of abortion occurring in such patients quite as readily, and with as few troublesome symptoms, as in one whose uterus was healthy. The general tissual changes going on in the uterus would lead us to expect this in advanced pregnancy, but I confess to some astonishment at having seen kindly, rapid, and complete dilatation in abortion at the early periods. It is equally singular to see the return of the induration after the involution of the uterus is fairly completed. One would suppose that the softening accompanying pregnancy would be permanent, and this is usually the case. I have not observed in such cases that the abortions were attended with more hæmorrhage, or were more tedious or painful, than when they occur as the result of some transient cause.

Effects upon the Post-partum Condition.

Of its effects upon the childbed or post-partum condition, a favorable opinion cannot be given from my observation. A good getting-up is not to be expected with much confidence in patients affected with uterine disease. The most common effect in childbed is retardation of the processes of involution. The congestion consequent upon labor is protracted, the uterus remains larger and more sensitive than is usual, so that instead of the organ recurring to its primitive dimensions and susceptibility in one month, two or more may be required. The lochia, instead of subsiding in fourteen or twenty-one days, continues for weeks, or even months, after it should have subsided, and when it goes off it is apt to merge imperceptibly into leucorrhœa, which becomes persistent. Inability to walk or stand without great distress is the effect of the size and sensitiveness of the organ. A sense of bearing down, or of weight in the pelvis, pain in the sacrum, down the sciatic nerve or in the hip, harass the patient greatly, and these symptoms pass off so slowly that she is kept in bed an unusual length of time. Acute metritis not unfrequently supervenes, or acute inflammation of the cellular tissue at the side of the uterus. Phlebitis, pyæmia, and phlegmasia dolens are more likely to arise in patients who have chronic inflammation of the cervix.

On the other hand, it is a fact that these subsequent acute inflammations sometimes operate very favorably upon the chronic affections. Instances are not uncommon of patients being entirely cured by the effects of gestation and labor upon the tissue of the neck and its mucous membrane. We are to hope for this favorable result only as a remote probability, because, as already stated, the condition of the parts is generally left in *statu quo*, or, if any difference is perceptible, it consists in an aggravation of the disease, and the patients get up from childbed rather worse than better.

CHAPTER XIV.

PATHOLOGY OF HYSTEROPATHY.

WHAT are the pathological conditions giving rise to such numerous and diverse symptoms?

In answering this question it should be remembered that in consequence of the nervous and vascular connections and the one great function to which they all contribute, physiologically and pathologically, almost all of the pelvic viscera are a unit.

From the ovaries to the perinæum the genital organs are largely supplied with the same system of vessels and nerves, and are presided over by the same genito-spinal centre, and they all have for their boject the same general purposes,—generation.

In ovulation, menstruation, conception, pregnancy, parturition, lactation, and involution they all participate, and are in a continual state of change. The rectum and bladder are continually influenced, physiologically and pathologically, by the same conditions, and in return reflect their own changes back upon the genital organs proper.

All the genital organs are thus bound together as one great and complete system set apart for one grand purpose,—generation; subject to derangements that may begin in any one part or organ, and produce disorder in all the rest. Acting as a whole in the function of generation, this extensive and perpetually active system reacts with great energy through its spinal centre upon the whole organism.

I have already in one example quoted from Dr. Tyler Smith—and similar cases are continually occurring—shown how vast and potent are the sympathetic effects produced by pregnancy upon the system at large.

In a state of disease this great system is as powerful in causing morbid symptoms and changes.

This view of the comprehensive nervous and vascular interdependence of the pelvic viscera, and their united influence upon the whole body, explains how the disease of any one of them may originate and perpetuate the general and local symptoms enumerated under the terms sympathetic nervous symptoms, hystero-neuroses, genito-urinary neurasthenia, etc. And we are obliged to give full scope to this idea in all our estimates of the very complex functional and organic diseases of the female organs of generation, if we would arrive at correct indications for treatment.

The *essential* pathological conditions of the pelvic organs upon which the reflex sufferings of the general system are founded are the hyperæmia and the hyperæsthesia of those organs. Without increased sensitiveness or increased vascularity of them there can be no general suffering. This proposition is proven by the testimony of the best authors and teachers everywhere.

The more marked form of hyperæsthesia is for the most part confined to the urethra, vulva, perinæum, anus, and coccyx: vaginismus, anal fissure, urethral caruncula, coccygodynia. Sometimes there is hyperæsthesia of the vagina and vaginal cervix uteri. These will be described in their proper place.

In studying the subject from a clinical point of view the practitioner will find disease of the ovaries or uterus the starting-point of all these sympathetic derangements more frequently than all other pelvic affections, and consequently it is very important that we should have a clear view of their pathology.

While the ovaries in many respects are paramount in their influence on the pelvic organs, it is to diseases of the uterus we must look for an explanation of the great majority of sympathetic ailments above described.

Now what is that essential pathological condition of the uterus which causes these symptoms? One condition seems to be present more frequently than any other, and that is hyperæmia. The enlargement of the uterus, as well as the hyperæsthesia of that organ, generally depends upon hyperæmia, and the sympathetic influences of the uterus are excited through the system of nerves that accompany and control the vascular system,—the vaso-motor nervous system. Displacements, flexions, and lacerations do not produce any general disturbance except when attended with hyperæmia. This statement is made in a direct or indirect manner by almost all of our best gynæcologists.

Dr. Emmett says:*

> "A version, as has been stated, may exist for an indefinite period without causing any disturbance so long as the organ does not prolapse sufficiently to increase the existing obstruction to the circulation."

With reference to lacerations he says:

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* Principles and Practice of Gynæcology, pp. 309, 462.

> "Sometimes the laceration heals while the woman remains in bed after labor, but if the surfaces should not heal before she gets up they will soon become the seat of extensive erosions, which bleed readily. As the uterus increases in size a profuse cervical leucorrhœa follows, and the appearance of a frequent show causes the patient to seek relief. She will complain of inability to stand with comfort, of a continual headache, with pains down her limbs, sometimes irritation of the bladder, and as a rule marked nervous disturbance."

And again on page 467:

> "The uterus, from increased weight, and while resting on the floor of the pelvis, will, by traction on the cellular or connective tissue, obstruct the circulation sufficiently to produce not only increased congestion of the organ itself, but also of the neighboring tissue."

These quotations show that Dr. Emmett believes that the effects of displacements and lacerations are to produce and keep up hyperæmia, congestion of the uterus, and *through this condition* to cause all the local and general symptoms.

The object of all his treatment preparatory to uniting the surfaces of a laceration of the cervix is to relieve the hyperæmia by giving freedom to the circulation of the uterus and making local applications to the erosions. When all of this is done the symptoms subside, and the cure of the laceration renders the cure permanent.

Hyperæmia is not often an independent affection. It is, in fact, generally the result of some antecedent etiological lesion, and may be removed by getting rid of the cause. It does, however, occasionally stand independent of any other lesion, and may be cured by measures having no other object in view than the removal of the hyperæmia.

Now what is this hyperæmia? There are undoubtedly several forms. 1. Active hypertrophic hyperæmia, as in pregnancy, the earlier conditions of subinvolution, the presence of fibrous tumors, or granular degeneration of the mucous membrane. 2. Passive, venous, or congestive hyperæmia, as where the uterus is displaced or flexed, and the blood confined to the fundus or other portion of the organ by constriction of the veins, or where effusions around the uterus prevent the free outward flow of the blood. 3. Inflammatory hyperæmia. These are the most common and easily determined forms, and will serve as examples of hyperæmia. All these forms may become chronic, and all of them when of chronic duration produce changes in the fibrous structure of the uterus.

It is impossible for them to remain simple hyperæmia, because the abundant supply of arterial blood in the active forms of congestion produces hypertrophy of some of the tissues that enter into the structure of the walls of the uterus, and in others gives rise to neoplasms.

In the passive and inflammatory forms of hyperæmia there necessarily occur fibrino-plastic effusions, which, after coagulating, become organized in a low degree, causing not hypertrophy, but induration and condensation, which finally cuts off the capillary circulation. In these cases the connective tissue formed by this low organization of fibrino-plastic effusion supplants the natural structure of the uterus to a greater or less degree, and is what I understand by hyperplasia.

After the uterus is thus changed in structure it is sometimes impossible to restore it to its natural condition. These indurated uteri unfortunately are not deprived of their sensitiveness; in most cases, in fact, there is hyperæsthesia, and as a consequence they are the source of extensive reflex mischief.

In the inflammatory form of hyperæmia there are often circumscribed points of induration in the cervix, in the anterior or posterior walls of the fundus, owing to the locality in which the vascularity is most protracted or intense.

After the effusion and induration is established the active inflammatory condition may subside, leaving the part in a state of induration and hyperæsthesia. Thus we find nodules of hardened tissue, not the seat of inflammation, but the *consequence* of that process. As a rule, these nodules may be removed when properly treated, especially if they exist in the cervix. The deposits thus occurring frequently distort and deform the cervix, rendering one portion more prominent than others.

It should be borne in mind that these conditions do not indicate the presence of inflammation, but its effects. They give rise to the same sympathetic symptoms and suffering that are noticed in other forms of uterine disease.

It is too narrow a view of the pathology of uterine disease, therefore, to apply the term congestion to all these forms of hyperæmia. To complete this very cursory statement in reference to the different forms of hyperæmia, it is necessary to trace somewhat further the changes they all may, and generally do, bring about. During the progress of all these hyperæmiæ, the mucous membrane undergoes notable changes. One of these changes is the *so-called* ulceration. I use this phrase "so-called" in imitation of those who deny the existence of ulceration.

Now ulcer means a sore, and is defined by Dunglison to be "a solution of continuity in the soft parts, of longer or shorter duration."

Is a solution of continuity of the epithelium an ulcer? Abrasion is a term used by some writers to signify the loss of epithelium; but abrasion means a solution of continuity in the epithelium, and is essentially the same as ulceration. If it suits the reader better to call this loss of the epithelium abrasion, I have no objection to the term, but I believe it less a reformation in nomenclature than a dispute about non-essentials.

I believe further that abrasion or ulceration, instead of being an incident resulting directly from laceration, is an essential effect of the impaired nutrition of the mucous membrane, brought about by the hyperæmic condition of the fibrous structure of the cervix.

This is in accordance with the teachings of that eminent pathologist, the late Dr. E. R. Peaslee, in the lectures delivered to his classes, and published in the *Medical Record* for January and February, 1876, and most of the recent writers on gynæcology.

That ulcerations occur in the trophic forms of hyperæmia, we have the assurance of the late Dr. Cazeaux, who found that a large number of pregnant uteri were ulcerated. He says:*

> "According to MM. Gosselin, Danyau, and Costilhes, 'these ulcerations are much less frequent than I had supposed, and are met with in hardly more than half the cases, while I have observed them in seven-eighths.' In short, therefore, the fungous condition of the neck, and the ulcerations, of greater or less depth, which complicate this state of the parts near the termination of pregnancy, seem to me to be the consequence of the active or passive congestion with which the organ is affected."

So with all the active and passive congestions the integrity of the mucous surface of the cervix is affected, and it is the seat of ulceration of a greater or less depth.

Now then I think we must regard abrasions, "granular and cystic degeneration," or ulcerations of the cervix, as results of some form of uterine hyperæmia—trophic, congestive, or inflammatory, instead of standing as an etiological condition.

While I believe the hyperæmia of the pelvic organs to be the more frequent form of disturbing condition, I am satisfied that there are a great many cases of pure neurosis of the genital organs. In these cases the genetic element is in the nervous system, and the manifestations are morbid exaltations of the sensibility of the parts in which the suffering is the greatest. There is no congestion, no inflammation, no displacement, or other apparent deviation from the natural appearances of the pelvic viscera. Yet the patient has pain and sensitiveness in one or all of them, and is the subject of the most distressing and extensive array of hystero-neuroses. In such cases, too, there may be no deviation from the normal condition except that of pain and increased sensitiveness. They are not always even dysmenorrhœal cases. Although not confined to the multipara, they are more frequently found in young girls and sterile married women. In considering the subject of the essential pathological conditions giving rise to uterine symptoms, we cannot, therefore, ignore the neuropathic forms of ovarian and uterine affections. They are too numerous and too obvious to escape the attention of the observing gynæcologist.

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* Pages 456–459, fifth American from seventh French edition.

Mucous Inflammation.

As a simple affection, that of inflammation of the mucous tissue is quite frequent. Where they coexist, we have the increase of size, hardness, and irregularity of shape indicating inflammation of the submucous substance, combined with the evidence of mucous disease.

Seat of Mucous Inflammation.

The inflammation of the mucous membrane may extend to the whole of it, from the fundus through the cavities of the body and neck to the os, and then cover the whole of the vaginal portion of the uterus. This extent of inflammation is not very frequent, however, and when it occurs it almost immediately succeeds parturition or abortion, or is produced by gonorrhœal inflammation. I have seen it under these circumstances oftener than any other. It almost always causes a great deal of distress and suffering.

Probably the most common extent of inflammation is to the mucous membrane of the cavity of the cervix, and a portion or the whole of the membrane covering the intralabial portion of the os. By far the greater number of instances that have come under my observation in practice were inflammation of the membrane around the os and inside the cavity of the cervix. I fear that this statement represents a fact that has not been generally apprehended by practitioners. I am disposed to believe that too many physicians have failed of success in curing their cases because they have not followed up the inflammation sufficiently above the os, in the cervix, being satisfied with curing that which was visible only, and, in consequence, leaving really the most important part of the affection untouched.

Cavity of the Body of the Uterus.

Inflammation *limited* to the cavity of the body of the uterus is not common, but I am quite sure that I have met with it in several instances. Some of these had been treated for inflammation of the os and cervix, and cured of this, but the inflammation in the cavity of the body was left. Others had not had any treatment for uterine disease, as far as I could learn. They had habitual leucorrhœal discharge of rusty-colored mucus, very much like the brickdust sputa of pneumonia; the os externum was very small, and the os internum large, as was also the cavity of the body. One patient did not menstruate, and had not for a number of years, and although married, did not become a mother; the disease was caused by miscarriage in early life. She was thirty-four years of age.

Endocervicitis.

Endocervicitis alone, or inflammation limited to the cavity of the cervix, is, on the other hand, an extremely common form of the disease. Not unfrequently this form of inflammation exists without any appearance of it in the os or external to it. When inflammation of the mucous membrane of the cavity of the cervix alone exists, it has certain effects upon the shape and other properties of the neck that are apt to attract our attention. Dr. Bennett describes the os as patent and the cavity of the neck enlarged, so as to admit the finger and permit the opening of it by a speculum to some extent, so that we may see the inside. Now, while this is very generally the case, it certainly is not always so. This open condition of the os and cervix is more frequently met with near the menstrual periods than at any other time, and is probably always owing to the congestion of the vascular tissue of the cervix and about the os.

Endocervicitis with Diminished Size.

I have, undoubtedly, seen many cases of this endocervicitis, in which neither the os nor cervical cavity was in the least enlarged, and others, in which the os uteri was contracted much below its natural size. The secretions of the mucous membrane are always modified; generally they are very much increased, and often changed in character. They may become purulent or sanguineous, owing to the grade of the inflammation and the degree of congestion. The inflammation situated external to the os, on the end of the uterus, between the labia or their external surface, is very common, but it is not often limited to this part. It is almost always combined with endocervicitis.

Certain forms of these mucous inflammations are found more frequently in certain sorts of patients.

Endocervicitis in Virgins.

Virgin patients seldom have inflammation external to the os uteri; their disease is endocervicitis almost always; very rarely there is a little rim of inflammation around the os upon the end of the uterus.

Endocervicitis in Aged Women.

Again, in senile patients, women who have passed the climacteric period, and ceased to menstruate for some years, we find the inflammation in the cavity of the cervix. The os uteri in the aged is normally small, and simply looking at it will seldom convey a correct idea of the state of the cervical cavity, but the introduction of the probe in cases of endocervicitis will give rise to very great pain. The endocervicitis of old women is extremely difficult to manage, and is always protracted.

External Inflammation combined with Internal in Childbearing Women.

In married, childbearing women we find the external combined with the internal uterine inflammation of the mucous membrane. They are the kind of patients in whom most frequently the enlargements, indurations, and fibro-cellular inflammations are observed. The form of disease in persons who have been married, but never have been pregnant, partakes to some extent of the character of that of the virgin and the childbearing woman. They often have external combined with internal mucous inflammation, but not often fibro-cellular. Now, what I mean by these statements is, that these kinds of patients are likely to have the forms of disease which I have ascribed to them, but there certainly are exceptions to all of them.

CHAPTER XV.

ETIOLOGY OF UTERINE DISEASE.

THE genital apparatus of woman is in a constant state of predisposition to disease. The very turgid condition of these organs for so many days in every month is one that in appearance borders so closely on the pathological that in other organs it would be taken for one of disease, and the symptoms are equally like those caused by disease.

This similarity between menstrual hyperæmia and morbid congestion is so great that it makes it impossible to distinguish the difference by sight and touch alone. The color of the uterus is greatly increased; it is larger, heavier, and less easily moved in the pelvis, and we know that it requires only a prolongation of this condition to constitute a state of disease. Another degree of nervous and vascular excitement would be morbid congestion of the uterus, and all experience shows that cold applied to the person when the organs are in this condition seldom fails to add that degree of excitement, or that the same thing may be brought about by standing too much or by other unusual exertion.

The position of these organs at the lower part of the body, much below the heart, having veins without valves and of weak contractile powers, is another cause of exceptional hyperæmia.

Add to these the frequent erotic excitement to which they are subjected in consequence of the peculiar sexual life a woman lives, and we have another predisposing condition of great influence.

By the *peculiar* sexual life of woman I mean a comparison of her life with the sexual life of other animals.

Female animals do not cohabit night and day the year round, during pregnancy and nursing. The interval between the acts of sexual intercourse in animals is long, and comprises all the time during pregnancy and nursing, while women observe no time of abstinence except the few days occupied by the menstrual flow, labor, and the period of lying-in.

Pregnancy and parturition are strongly predisposing conditions. In a paper read before the Chicago Gynæcological Society, and published in the August number, 1880, of the Chicago *Medical Journal* *and Examiner*, by J. H. Etheridge, A.M., M.D., Professor of Therapeutics and Medical Jurisprudence of Rush Medical College, I find the following table, which I think fairly represents the subject:

Cases.	Causes.		Character of Cases.	
100 Gynæcological cases.	Confinements,	50	Hypertrophy,	34
Dispensary.	Miscarriage,	28	Uterine catarrh,	53
	Hard work,	5	Lacerated cervix,	9
	Unknown,	17	Prolapsus,	2
		—	Metrorrhagia,	1
	Total,	100	Retroflexion,	1
			Total,	100

The long-continued and very great hyperæmia of pregnancy as elsewhere shown causes abrasions and ulceration before labor, while the pressure of the uterus upon the bladder, rectum, etc., sometimes gives rise to permanent pelvic difficulties.

Parturition is so generally recognized as a predisposing cause of disease that the greatest care is and ought to be taken to conduct patients through it and the post-partum condition in order to avoid subsequent difficulties.

An unusual length of time is avoided in labor because of the damage that may arise from too long pressure by the child's head or prostration of the nervous system from violent exertion. But in the normal labor there are many conditions that predispose to disease. The uterus is left large, hyperæmic, and in a state of degeneration, with the cervix bruised, lacerated, and denuded of its mucous membrane.

The vagina and all of its surrounding tissues have been stretched, pressed, and bruised, and the vulva and perinæum are torn and bleeding. While all these are conditions necessarily attendant upon a natural process, and consequently must be regarded as normal, yet they are certainly upon the verge of disease, and are predisposing conditions *prolific* of disease. They predispose to acute disease, as metritis, perimetritis, cystitis, vaginitis, etc., but their influence is more frequently observable in the chronic affections resulting from an incomplete recuperation from the normal accidents of labor.

But abortion is another strongly predisposing as well as exciting cause to disease of the uterus. In many cases of abortion the organ is repaired of damages as well as after natural labor. This, however, is an exception to the general rule. Abortion is generally followed by either acute or chronic disease, and sometimes both. The reasons for this are too obvious to require any farther consideration.

Other and very grave predisposing causes may be found under the head of puberty and change of life.

In a state of predisposition from any of the causes above mentioned, the application of cold is often productive of congestion and chronic inflammation of the uterus and ovaries.

This is often proved by the results of a cold during the congestion just preceding menstruation or at the time of the flow, and in childbed, or for some weeks afterward.

There are other causes which act in conjunction with the predisposing conditions I have mentioned above, but are sometimes independent in their effects. The abuse of the organs by the practice of vicious habits, masturbation, excessive intercourse, etc., standing too long, working the sewing-machine, and the pursuit of other employments that keep up a stasis of blood in the pelvis. School-teachers, saleswomen, and sewing-girls come within the influence of these causes.

Still other causes are accidents, violence, gonorrhœa, etc.

Gonorrhœa is a very fruitful source of chronic endocervicitis and endometritis. Dr. Emil Noeggerath,* of New York city, believes that gonorrhœa is a frequent cause of several forms of inflammation in the pelvic organs of women, as of the Fallopian tubes, cellular tissue, ovaries, and peritoneum. He finds evidence that it remains in a latent condition or form in the mucous membrane, and in consequence of the influence of some exciting cause is awakened into an acute form of disease, which probably more frequently attacks the pelvic peritoneum or cellular tissue. He thinks that gonorrhœa often persists in this chronic form in the male, and although apparently cured, the husband is capable of infecting his wife for years afterward. I am quite convinced that his views in this respect are not without foundation and deserve the serious consideration of the profession. If Dr. Noeggerath's teaching should be demonstrated by further observation it will place gonorrhœa as a latent source of mischief on the same footing as syphilis. However this may be I am quite sure that chronic endocervicitis, in which the glands of Naboth are the principal seat, and when the cervical canal is filled with a tenacious mucus of so tough a consistency as to make it difficult to remove, is frequently of gonorrhœal origin.

We cannot always trace these chronic cases to an acute attack of gonorrhœa, but when we can get at the facts we will generally find that the husband has been the subject of gonorrhœa, and probably yet has gleet or the chronic form of that disease.

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* First volume Transactions of the American Gynæcological Society.

Under the head of puberty I have pointed out many deleterious influences under which the girls of this country are placed, and which lead, primarily or secondarily, to the development of sexual disease in consequence of natural and social conditions which cannot be escaped.

CHAPTER XVI.

DIAGNOSIS.

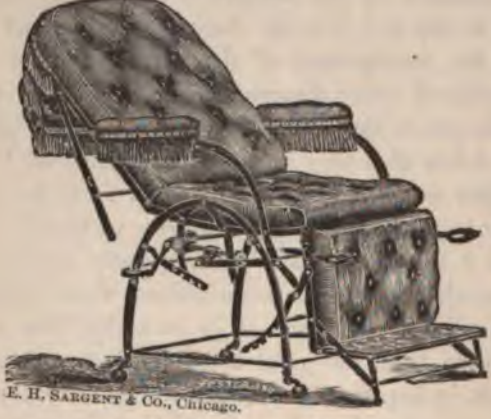
FORTUNATELY for suffering woman, we may arrive at demonstrative knowledge of the extent, nature, and locality of diseases of the generative organs, and, as a consequence, treat her diseases with the certainty which a positive diagnosis always insures. The evident advantages of a physical diagnosis will render it quite unnecessary for me to use any argument in favor of it, or to induce medical men to resort to it. A physical examination, however, of the genital apparatus of females, is quite a different matter from a physical examination of the chest, eye, or ear, or any other organ of the body; and hence the necessity of approaching and conducting it under conditions rendered imperative on account of the circumstances connected with it. The education and natural sense of modesty, so appropriate to female character, and which always command the respect of *gentlemen*, make such examinations disgusting and disagreeable above almost all others demanded by the necessities of woman's circumstances. With a view to this fact, it is our duty, by our conduct toward our patient, and the management of the examination, to divest it as nearly as possible of every disagreeable feature. Medical men generally, I think, are, as they should be, actuated by the above considerations, and I fear that they are often so influenced by their own sense of delicacy as too frequently to abstain from the enforcement of essential investigations. This is an error we should always bear in mind, and, I think, we shall less frequently regret a thorough, although somewhat indelicate examination, when dictated by an honest and intelligent conviction of its necessity, than a neglect of such examination from too great a deference to a sense of shame. We should not, in important cases, take things for granted.

Our bearing to a female patient should be deferential, candid, and modest. She should be convinced by our demeanor that everything we do and say is strictly necessary and relevant to her case, and has its foundation in our solicitude for her welfare. Nothing, therefore, should be said or done but what is called for and obviously proper. This sort of treatment from her medical adviser will always command the confidence and earnest co-operation of an intelligent female patient. There should be a full and explicit understanding, when possible, between the physician and the patient, as to the necessity of a physical examination, in what it consists, and how it is to be conducted. The good sense of the practitioner will enable him to judge whether he should commit the detail of explanation to the husband, or some other appropriate second party, or whether he impart it directly to the patient; all the circumstances of the case will enable him to determine this matter without much difficulty. After the preliminaries are disposed of I would insist upon conducting the examination without exposure. It is needless in ordinary uterine examinations, and should be permitted only when the disease is upon the external parts. One position and kind of preparation, so far as the patient is concerned, will suffice for most cases, whether we wish to make a manual or an instrumental examination. There is no necessity for the patient to unclothe herself.

Position of Patient for Examination.

In the ordinary work of an office I think there is nothing more convenient than Wilson's chair. It can be made to assume so many forms that it can be used as a chair or table either, and is easily moved into any position in relation to the light.

FIG. 51.


E. H. SARGENT & Co., Chicago.

Wilson's Operating Chair.

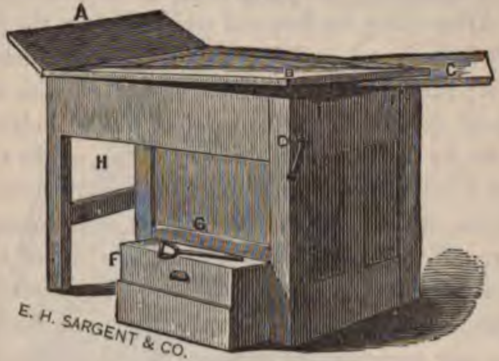
For many purposes, however, a table will afford us more satisfaction. It is very much to be preferred in surgical operations.

While the gynæcological table represented in Fig. 52 is very convenient for an office, an ordinary table such as can be found in any dwelling can be made to answer every purpose.

There are three positions of which we may avail ourselves in making examinations or performing operations, the dorsal, the latero-abdominal, Sims's position, and the knee-chest position.

In the ordinary dorsal position the patient is placed on her back with the breech very near the end of the table or chair, the knees flexed and the thighs drawn up close to the abdomen, the feet resting by the side of the nates or in the stirrups, and the shoulders elevated upon pillows. In this position both hands may be used with great freedom in exploring the pelvic organs.

FIG. 52.



Byford's Operating Table.

It is, in fact, indispensable to a perfect bimanual examination, and is very convenient for the use of the sound, and almost every form of speculum. Even Sims's speculum can be made to do effectual service in this position.

For many minor operations and uterine applications it is a very convenient position. This was a favorite position with the late Professor Simon. When the hips and shoulders are greatly elevated, the knees extended, and thighs forcibly flexed upon the abdomen, this is called Simon's position, and is not inferior to any other for examination or surgical operations on the vagina and uterus.

Sims's position consists in placing the patient on her left side, with left arm under and behind the body, her knees drawn up close to the abdomen; the right, flexed to a greater degree and overlying the left, rests on the table in front. The patient thus lies upon the left side, with the abdomen somewhat dependent.

When the perinæum is drawn back the vagina is distended by atmospheric pressure, and the vaginal wall and uterus brought into view.

The knee-chest position is also Sims's position, and produces the same effect in dilating the vagina obtained by the other, only perhaps in an exaggerated degree.

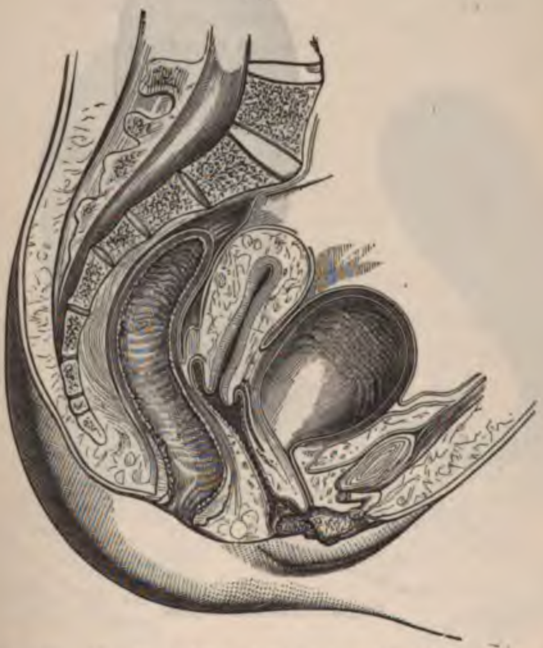
The patient should be placed in a good light, in order that we may see every part exposed by the instrument.

Digital Examination.

The mode of examining the pelvis with the fingers is of the utmost importance. After oiling the fore and middle fingers the index should be very gently introduced, and the examination conducted as far as possible with it; then the two should be introduced, with which nearly all the cavity of the pelvis can be reached. The index finger will not reach as far, by one and a half or two inches, as the two together. As the finger is introduced, it naturally and easily comes in contact with the rectum, which may contain fæces, and consequently will appear as a round, full ridge along the middle line of the posterior wall of the pelvis, or, in the absence of these, a mere soft fibrous cord, hardly perceptible to the touch. By pressing upon the rectum with the finger, we may ascertain the presence of inflammation by the increased sensitiveness; the organ is absolutely insensible to moderate pressure when in a state of health. We should seek for internal hæmorrhoids, or the induration and contraction indicative of stricture; and, in short, examine it as completely as possible in this way. Next, we should turn our finger forward, pass it up behind the symphysis pubis, and along the front wall of the vagina, and as well as practicable ascertain the condition of the bladder. It may contain a calculus, or other foreign substance, or, what is very much more common, be inflamed. In the first case the foreign body may be felt by the finger. The examination is more complete if the fingers of the left hand are used to press into the pelvis from just above the symphysis pubis. The substance can thus be grasped by the fingers of the opposing hands. With the fingers of one hand above the bladder, and the other in the vagina below it, we press it and thus ascertain its sensitiveness. With the two fingers of the right hand pressing up by the side of the uterus, between it and the walls of the sides of the pelvis, first on one side and then the other, while the fingers of the left hand press downward toward them from above, so as nearly as possible to meet them, the cavity may be pretty thoroughly explored, and any unnatural substance or uncommonly sensitive tissue be easily discovered. All these manipulations should be performed with the utmost gentleness, remembering that rudeness may deceive us as to the sensitiveness of organs, as well as give the patient unnecessary suffering. But while we are gentle, we should be as thorough as possible. The main object, however, for which we institute these examinations is to ascertain the condition of the uterus with respect to position, size, shape, consistence, sensitiveness, etc.

Where is, or ought to be, the os uteri and cervix, and how shall we find them? In the virgin, the os uteri ought to be in the middle of the pelvis, upon, or a little below, the level of the arch of the symphysis pubis, and within easy reach of the index finger, two inches and a half from the entrance of the vagina. We may know the neck of the uterus by its consistence, shape, size, etc. It has more consistence than any part with which our finger comes in contact, as we push it backward into the vagina. In passing through the vaginal canal, the finger is impressed with a soft, intestinal sensation, and can distinguish nothing but loose folds, that are dissipated and lost in

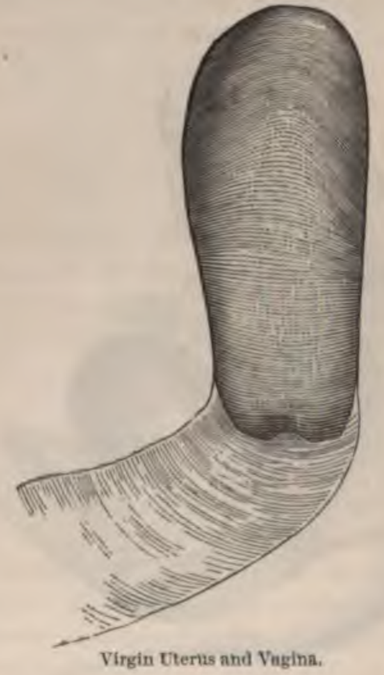
FIG. 53.



Natural Position of the Pelvic Organs with Full Bladder.

the surrounding softness by the slightest pressure, until it comes to the neck of the uterus, which has consistence enough to retain its shape under considerable pressure. If we push it upward, backward, or downward, it retains the same characteristics. The finger can be carried up the side, up before, or behind it as a projection, and surround it in every direction except above. This being unlike anything else in the vagina, will be easily recognized by an uneducated finger. The shape of the virgin cervix uteri is almost cylindrical, slightly compressed from before backward, and not far from three-

FIG. 54.



Virgin Uterus and Vagina.

quarters of an inch in diameter in every direction; it projects
an inch into the vagina, and the projecting or free end of it is
parently cut nearly square off, so as to present at its inferior
almost a flat surface, with a mere dimple in the centre correspon
with the os uteri.

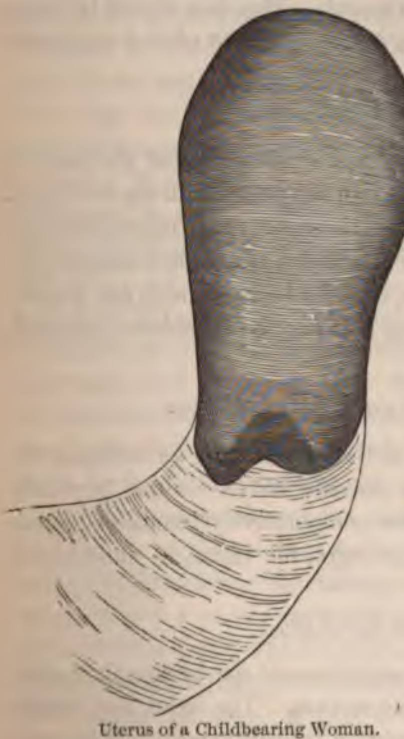
The cervix uteri of the childbearing woman is generally a
lower in the pelvis, and often slightly turned to one side, doe
project so much into the vagina, is about an inch wide, or o
little more, and from half an inch to three-quarters in its a

posterior diameter; and, instead of being truncated, seems formed of two distinct projections at its inferior extremity (the anterior and posterior labia of the os uteri). Between the labia or projections is a deep fissure, with its extremities directed to the sides, large enough to partially admit the extremity of the index finger. *Os tincæ* is applicable to this form of the os uteri, but in nowise is expressive of the shape of the virgin os uteri; neither is it descriptive of the senile uterine mouth.

Os Uteri in the Aged.

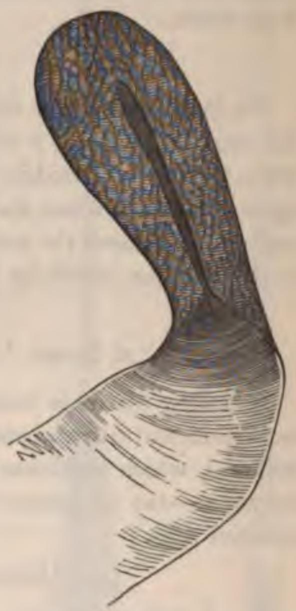
The os uteri in the old is higher in the pelvis than in the virgin or multipara, does not project into the vagina, and feels more like a pit at the termination of the vagina. As women advance in age, this description is more applicable than very soon after the cessation of the menstrual discharge. There is often a cord or frænum-like projection in the vaginal walls, which is planted into the external surface of the anterior and posterior lips of the mouth of the uterus, and

FIG. 55.



Uterus of a Childbearing Woman.

FIG. 56.



Senile Uterus and Vagina.

thus extends backward and forward to be lost in the anterior and posterior median line of the walls of the vagina. This frænum is more apparent, if not more developed, as women advance in age; but I have known it so prominent as to be mistaken for the result of disease, even in the middle-aged. In one case an intelligent practitioner thought it an evidence of the injurious effect of strong caustics. The consistence of the virgin and multipara cervix uteri is the same. To the sense of touch it gives the idea (which is a correct one) of deep fibrous tissue, almost as hard as cartilage, covered over thickly with areolar tissue. Dr. Bennett compares it to the feel of the cartilage of the lower extremity of the nose. It seems to me not quite so dense, although nearly so. In health it is wholly insensible to pressure with the pulp of the finger, and it requires considerable force to produce pain with a plain round instrument. This fact should be borne in mind in our examinations, viz., *a healthy cervix uteri is not tender to the touch.*

Corpus Uteri.

We may examine the shape, size, and sensitiveness of the body of the uterus by pressing it down well into the pelvis with the left hand, while the fore and middle fingers of the right press upon it as high up as possible. When the uterus is healthy, the fundus cannot generally be felt above the symphysis, even by lifting it with our fingers, so that if it can be felt by both hands it may be considered enlarged.

A Tender Uterus is an Inflamed Uterus.

A healthy uterus is insensible to the handling of an ordinary examination, and *a tender uterus is a diseased uterus*—in fact, generally inflamed, which condition converts comparatively insensible organs elsewhere—the periosteum and cartilages, for instance—into highly sensitive ones.

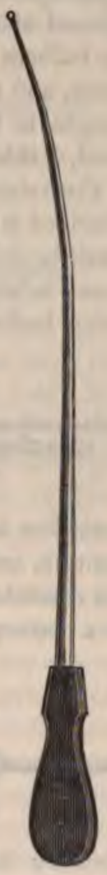
Examination per Rectum.

The digital examination of the uterus would not be complete without an exploration of it through the rectum. The index and middle fingers, or the former alone, introduced its full length into the rectum will reach high up the posterior surface of the uterus, and when retroverted may be extended entirely above the fundus and meet the point of a catheter directed backward and downward through the bladder. They may also survey the regions of the ovaria on either side, and discover disease or effusion in the folds of the broad ligaments as well as those organs, especially when the parts are pressed down well into the pelvis by the left hand from above the pubis.

The body of the uterus is more easily reached through the rectum than the vagina, and its posterior wall may be, in many instances, surveyed with great distinctness. When the uterus is retroverted or retroflexed, we can often pass the finger through the rectum entirely over the fundus and examine the anterior face of the organ. We may thus determine the diagnosis between the displacement and a small fibrous tumor situated in its posterior wall. In cases of anteflexion, we distinguish the point of the curvature of the posterior wall by the finger in the rectum, and thus assure ourselves that the tumor anterior to the os uteri is not a growth but the fundus turned forward. The width of the body of the uterus may be very accurately determined by the finger in the rectum. We may also get a good idea of its weight. Two, three, four fingers, or the whole hand, may be introduced into the rectum when the importance and obscurity of it demand. The introduction of the whole hand, however, is not devoid of danger, and the occasion for it must be imperative.

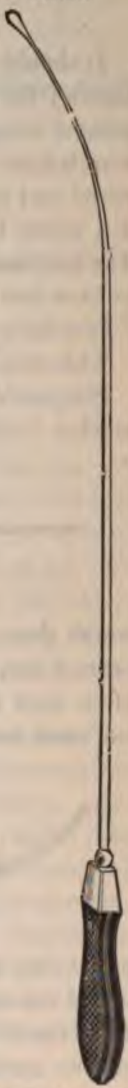
Dr. Simpson recommended and practiced the use of the probe or sound for the purpose of examining the uterus, and he has given to it a certain appropriate shape, size, and adjustment, which adds very considerably to its usefulness and adaptability to this particular use. It may be found in almost any of the shops of our instrument makers, under the name of Simpson's uterine sound.

FIG. 57.



Uterine Probe, or Sound.

FIG. 58.



Simpson's Sound.

Object in Using the Probe.

The main objects in examinations with the probe in such cases as I have now under consideration are, to measure the size and length of the cervical and uterine cavities, the mobility and position of the uterus, and, if need be, the connection of that organ with pelvic growths. The instrument must be adapted to these purposes; it must be long enough, of the right size, and made of flexible metal.

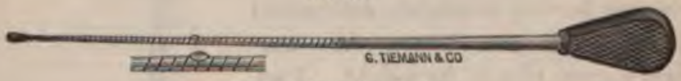
Size and Length of Probe.

It should be ten or twelve inches long, with one end fixed to a flat handle; the probe end should be terminated with the ordinary probe-pointed enlargement about one-eighth of an inch in diameter. The wire behind the bulbous termination should be one line in diameter, round and smooth, and should gradually increase in size to the handle, where it ought to be about a quarter of an inch in diameter. The best material, I think, is copper, galvanized. It is always well to have two or three sizes of probes for special purposes, but the one I have here described is the one I should recommend for most cases.

This sound will be found very convenient for ordinary purposes.

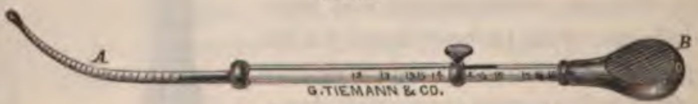
Simpson's sound is larger, less flexible, and graduated, marked by notches indicating inches. For measuring the depth of the uterus, where that organ does not vary to any considerable extent from its normal size, position, and shape, we could ask nothing better, but we often meet with conditions that render it almost useless, and hence we must have a variety of probes or sounds. Sims's small silver probe can sometimes be passed into the uterus where one larger would not enter it; in consequence of a slight elasticity, it will often adapt itself to the irregularities in the direction of the cervical and uterine cavities. This probe is often arrested because of its low degree of flexibility. Jenks's flexible sound possesses advantages which in some cases render it superior to any instrument endowed with a less degree of that quality.

Fig. 59.



Dr. Jenks's Uterine Probe.

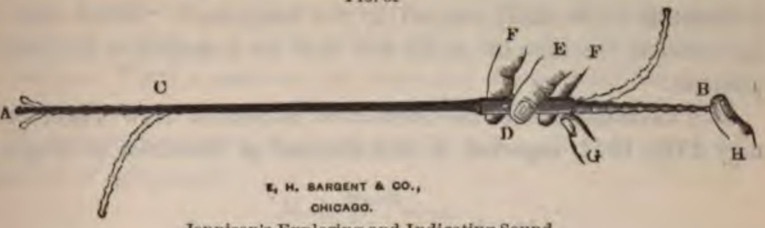
Fig. 60.



Dr. Jenks's Uterine Sound.

Dr. Thomas's whalebone sound is also very needful where we wish to survey a cavity of great tortuosity. It is small, and so flexible and elastic that in the hands of its inventor it has been of great service in diagnosing intrauterine tumors. Dr. Jennison's exploring and indicating sound is also useful for indicating the depth and direction of the uterine cavity.

Fig. 61



Jennison's Exploring and Indicating Sound.

Fig. 62.

Fitch's Measuring Sound.

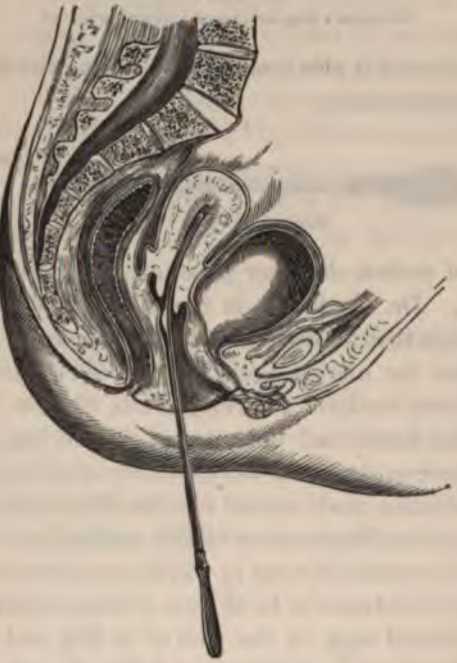
Accidents of serious character sometimes occur in using the probe in the uterus. Dr. Engleman, in the St. Louis *Medical and Surgical Journal*, says that he was present when Professor Carl Braun, of Vienna, pushed the uterine probe through the tissues of the uterus into the peritoneal cavity. Dr. Noeggerath, of New York, mentions a case where the sound had been passed five inches, going through the fundus uteri, as shown by the discovery of a cicatrix at a post-mortem examination made several months afterwards.

Other unquestionable instances of this accident are on record. Of these cases I have heard of none in which any untoward consequences followed what would seem to be at least a serious occurrence. As all the cases published were in the care of skilful and careful practitioners their occurrence must therefore be attributed to some other circumstance than rashness. The probability is that on account of disease the uterine structure had become too frail from attenuation or softening to resist the slight force used to introduce the probe. It is interesting as well as surprising that so little effect followed the violence done by the forcible passage and entry of the probe to the uterine wall or the contents of the peritoneal cavity.

The Fallopian tube is sometimes so patulous from disease as to permit the sound to pass through it into the cavity of the peritoneum. Where the whole of the uterus is enlarged, as it is found for many days and sometimes weeks after parturition, the uterine orifice of the tube is large enough to admit the probe. This may be the case also from the enlargement caused by uterine catarrh. When the opening to the tube is thus enlarged it requires but a slight inclination of the uterus to one side of the pelvis to bring the Fallopian orifice in a direction to be easily entered by the instrument. When once it has entered the tube the probe will find no resistance to its farther progress.

In a discussion before the Obstetrical Society of New York, January 17th, 1871, reported in the *Journal of Obstetrics* of August, 1871, Drs. Budd, Thomas, and Noeggerath, all speak of cases in which the sound would seem to have entered the peritoneal cavity to a long distance through the Fallopian tube.

FIG. 63.



Dr. Rosa Engert was kind enough to show me a case quite recently in which she repeatedly passed the sound through the Fallopian tube. When the end of the instrument had reached the fundus it required but little inclination to the left to cause it to enter the tube. The patient experienced no inconvenience from the examination.

Another accident, and one of more importance because of its almost invariably fatal effects upon the embryo, and also because of its more frequent occurrence, is the damage done probing an impregnated uterus.

Too great caution cannot be observed in making investigation of the condition of the uterus before passing the probe into its cavity. I have known two instances, however, in which the impregnated uterus was probed to a depth of several inches without interrupting gestation. When a suspicion of pregnancy exists there can hardly be a circumstance so grave as to justify the use of the probe.

In such cases we should unhesitatingly wait until time solves the question of pregnancy.

Mode of Using.

After oiling the instrument, and introducing the index finger of the right hand, and placing it upon the os uteri, the probe may be carried along the palmar surface of the finger until the point arrives at the mouth of the uterus, when, by elevating the point, it may be carried forward into the cavity of the cervix. In order to insure its passage through the cavity of the cervix, into the cavity of the body, the probe must be bent to the same degree as the male catheter. Great gentleness must be observed in the use of this instrument, because it is an easy matter to do violence to the mucous membrane by a very little rudeness of management. After the probe has passed to the os internum, a sense of constriction is felt through the instrument, which feeling soon gives way, and the probe then goes to the fundus without further resistance.

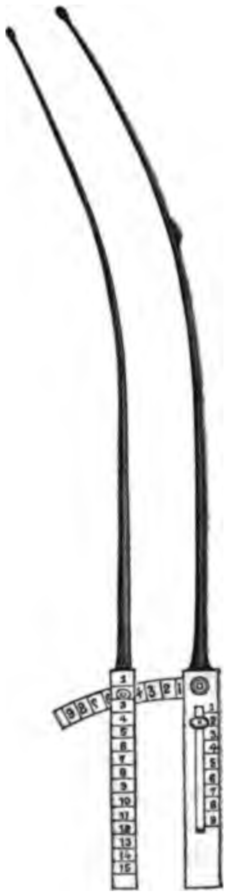
Length of the Cervical and Uterine Cavities.

The cervical cavity in the virgin is about an inch and a quarter in depth, and the cavity of the body from a half to three-quarters of an inch; the former in the multipara is one and a half inches, and the latter an inch deep. In old age both are nearly or wholly obliterated. I do not often use the probe in this way for the examination of the uterus in cases of inflammation and ulceration, but have adopted the suggestion of Professor Miller, of Louisville, and use it through the speculum, and shall consequently have more to say about it in connection with the use of that instrument.

It often happens, with the present means, that there is great difficulty in determining the thickness of the uterine walls, and even the presence of a small growth in the anterior or posterior parietes. For the purpose of enabling the inexperienced to arrive at what, in many instances, is valuable information in this respect, I have devised what may be called the hysterometer, a cut of which is here given.

It consists in the adaptation of two uterine probes to each other, with handles and scale for measurement, in such a way that one may be introduced into the bladder, and the other into the rectum. Thus approximated on the uterus, as represented in Fig. 65, the handles and scale may be so arranged as to make the measurement. When this is done the instrument may be detached, withdrawn, and the exact thickness of the uterus is ascertained. If we wish to measure the posterior wall, one probe is introduced into the cavity of the uterus, and the other into the rectum, and the scale and handles adjusted, the measurement taken, and the instrument withdrawn. When the anterior wall is to be measured, one is introduced into the

Fig. 64.

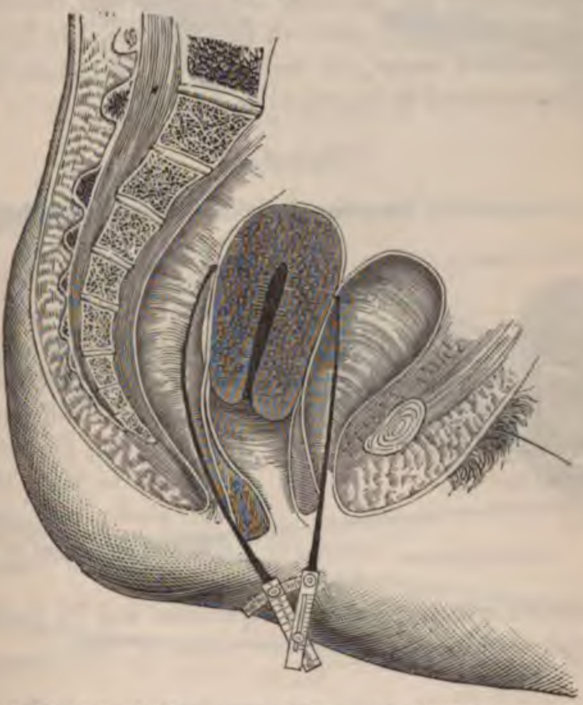


The Hysterometer.

uterine cavity, and the other into the bladder. In this way, the length of the uterus and the thickness of the walls may be easily measured.

This instrument will enable us to be much more accurate in our estimate of the shape of the uterus than any other means we can employ. The handles of the probes are adapted to each other by means of a slot, running from one end to the other, in one of the handles, while the other is of a size to fit into this slot closely and accurately. The scale is made movable, and may be easily adjusted after the probe portions of the instrument are in their proper place.

FIG. 65.



The Method of Applying the Hysterometer for Measuring the Thickness of the Uterus.

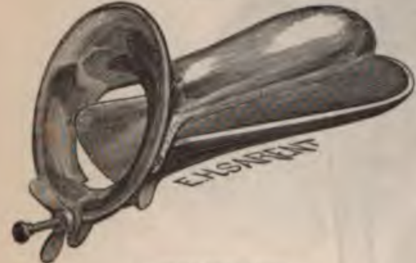
In cases of distortion of the cavity of the uterus, or when there is a tumor to measure, the probes will be bent in different directions, until they adapt themselves to the shape of the parts. In consequence of the necessity of variance in the curvature of the probes in making such measurements, the scale can serve only as an index to the relative position of the two probes, and cannot be relied on for the exact size of any growth or other cause of thickness of the walls. After having adjusted the scale, therefore, and observing the figures, we must withdraw the instrument and readjust by the scale, and then measure the distance between the points of the probes. This will give us the true measure. Often the instrument may be withdrawn with loosening it, which fact will facilitate the process very much.

In cases of retroversion or retroflexion, when we wish to diagnosticate these displacements from a small tumor, which they sometimes very closely simulate, one of the probes in the bladder, so curved as to follow downward and backward the anterior wall, the other in the uterine cavity, will clearly make out the difference. In like manner, only with reversed curves, and one probe in the rectum, the tumor may be diagnosticated to be present or absent.

Speculum.

Since the speculum has come into such general use, it has assumed a variety of shapes, and been composed of quite a number of different sorts of materials. For different purposes it is convenient, if not necessary, to be provided with different shapes, sizes, etc.; but for ordinary use we ought to have three different sizes: one small, one large, and the other of medium size.

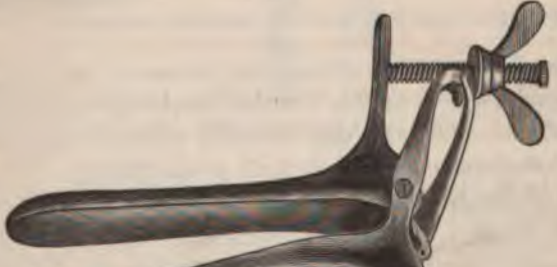
FIG. 66.



Higby's Speculum.

The bivalve, trivalve, and Sims's speculum and its modifications are the most useful forms.

FIG. 67.

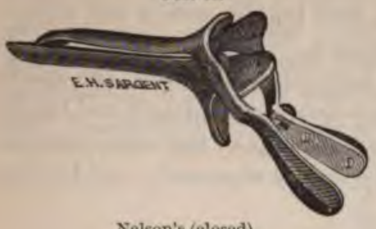


Nott's.

Nelson's, Nott's, and different sizes of Higby's.

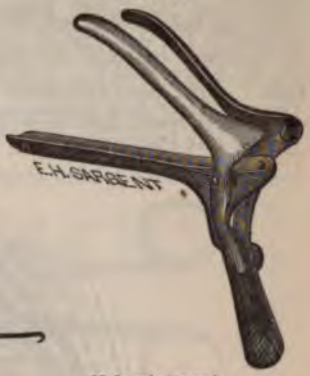
To aid us in getting a good view of the cervix, we may draw it into view, and, if necessary, depress it somewhat by the single or double tenaculum.

Fig. 68.



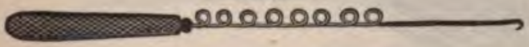
Nelson's (closed).

Fig. 69.



Nelson's (open).

Fig. 70.

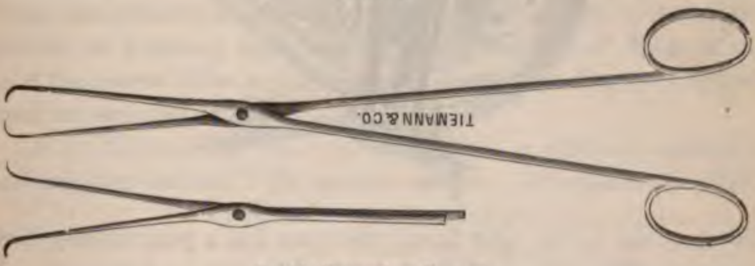


Nelson's Tenaculum.

Position of Patient for Speculum.

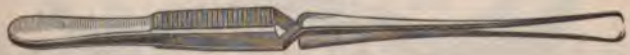
To be prepared to use this instrument to the best advantage, our patient should be placed in the position I have heretofore described, viz., before a large window, through which as much daylight should be freely admitted as possible. The better light the better view, and unless we have plenty, we cannot be certain of correct results in our examinations. The bed and patient should be so placed that the light may fall straight through the instrument, and full upon the parts at its internal extremity. We should also have some cotton-wool, sweet oil, and a couple of napkins, together with the dressing forceps I have before spoken of.

Fig. 71.



Double Tenaculum Forceps.

Fig. 72.

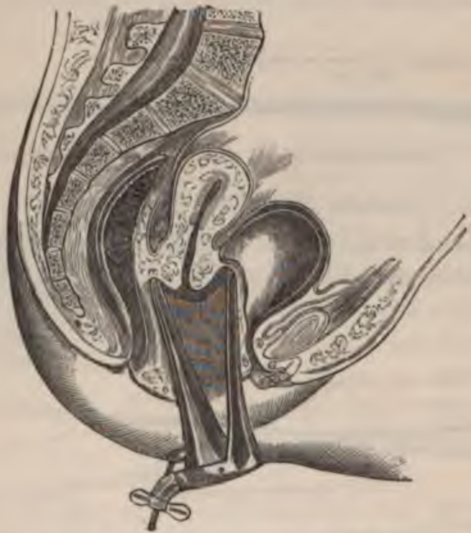


Tenaculum Forceps.

Mode of Using the Speculum.

In commencing the examination, we should oil our speculum, and our middle and index fingers. Kneeling before the patient, we should introduce the index finger, and, if need be, the middle one also, to ascertain the position of the cervix uteri. This precaution will enable us to know in what direction, and how far, to introduce the speculum. After this preliminary examination, the forefinger and thumb of the left hand should be placed upon the edge of the labia, one upon each side, with which they should be gently separated; and holding the speculum in the right hand, somewhat like a pen, we may introduce it by the guidance of the thumb and finger placed as above. In introducing it, we should push it forward sufficiently to reach the cervix, and direct it upward, downward, or to one side, as we may have ascertained, by digital examination, to be the position of the os and cervix.

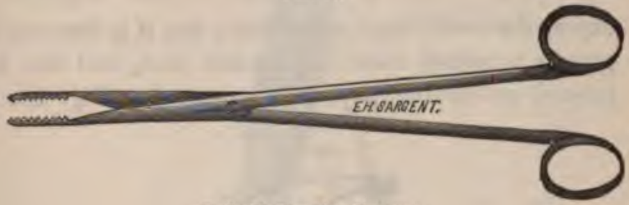
FIG. 73.



How to Find the Os Uteri.

If this is not the case, we may use our probe, and gently push the parts from one side to the other, turning the speculum in different directions until it is found. If the neck is too large to enter the speculum, we may spread the blades still more until it is brought into full view. Most frequently the parts are covered with some sort of secretion, and we should always, with cotton-wool or lint, with the dressing forceps, remove all of it, so that the naked mucous membrane alone presents itself to our view. Without this precaution, we may overlook an obvious and extensive ulceration; for as the parts are covered over with this thick, opaque secretion, it either completely hides them from view or much modifies their appearance. I have often met with cases which I have observed attentively, for the purpose, if possible, of detecting ulcerations without this step, but failed, until the cotton was used, when extensive ulceration appeared. Indeed, I never think of coming to a conclusion of any kind by the use of the speculum without this precautionary measure. By this means we can see the color, size, shape, and some other conditions of the parts, and the color, consistence, and derivation of the secretions. When the mucus, pus, or blood, comes from the mouth of the uterus, we can see it issuing from it. The shape and size of the neck and os of the uterus differ in different individuals, according as they have been impregnated or not.

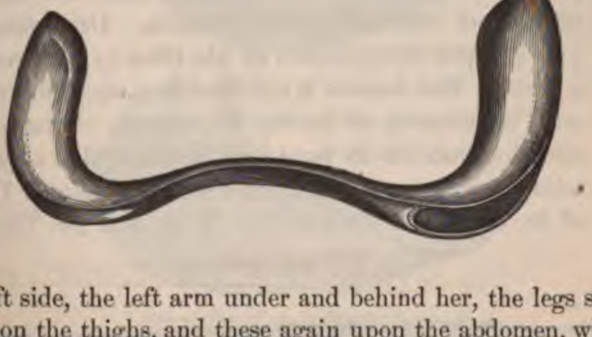
FIG. 74.



Byford's Dressing Forceps.

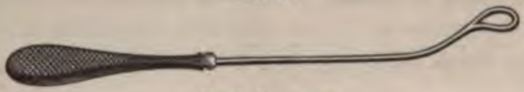
Dr. J. Marion Sims has instructed us in a different method of making examinations. He prefers a table. The patient is placed on the left side, the left arm under and behind her, the legs strongly flexed upon the thighs, and these again upon the abdomen, while the right knee is thrown forward, and over the left one on the table; this turns the patient over on the chest and partly on the abdomen. In this position his speculum is introduced by placing the forefinger

FIG. 75.



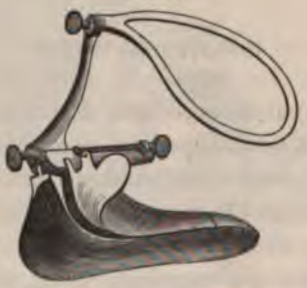
of the right hand in the concavity of the extremity to be used, and the finger and instrument introduced together. When well inserted, the perinæum is drawn backward and the instrument is given to an assistant to retain in place. This will generally expose the cervix uteri completely; but if it does not, the depressor is placed upon the anterior wall, and this latter is pressed out of the way, as represented in Fig. 83. Great freedom of examination is thus obtained in most cases. Still, if the os uteri is not seen plainly, it is seized with a tenaculum and drawn toward the external orifice. Many practitioners prefer this method of exposing the organ for all ordinary purposes of inspection and application. Dr. Emmet has improved upon the speculum of Dr. Sims by constructing it in a fashion that renders it self-retaining, and thus does away with the necessity of having an assistant. Many other self-retaining instruments have been invented, that answer an admirable purpose, among which I mention those of Dr. Pallen, of St. Louis, Dr. Nott, of New York, and Dr. Thomas. Of course it is necessary to have the patient so placed that the light

FIG. 76.



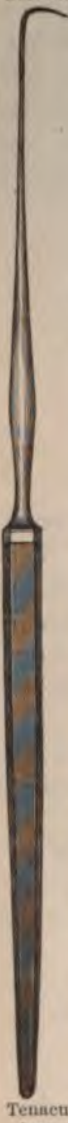
Sims's Depressor.

FIG. 77.



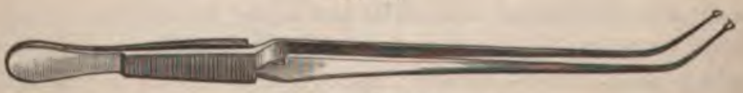
Dr. Emmet's Speculum.

FIG. 78.



Tenaculum.

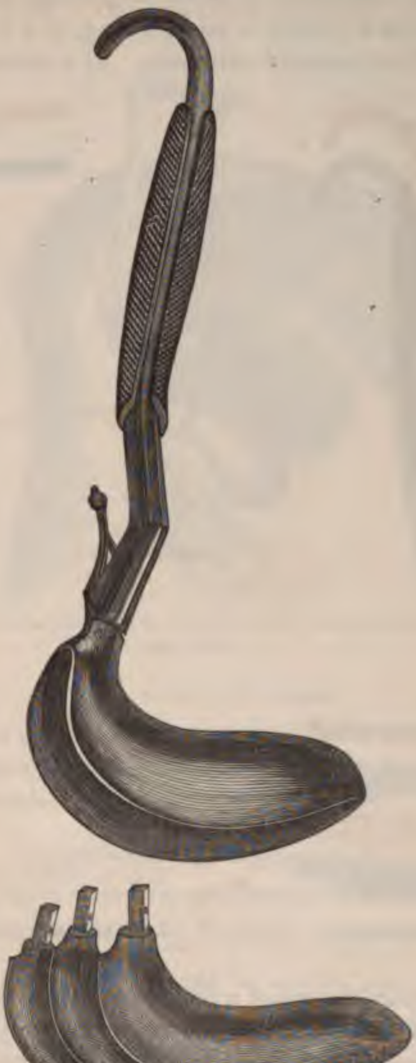
FIG. 79.



Nott's Tenaculum Forceps.

will fall full into the dilated vagina and on the cervix. Dr. Sims draws the cervix down, when necessary, by means of a tenaculum; this often facilitates the examination, and enables the practitioner to make applications or operations upon it with much certainty.

FIG. 80.

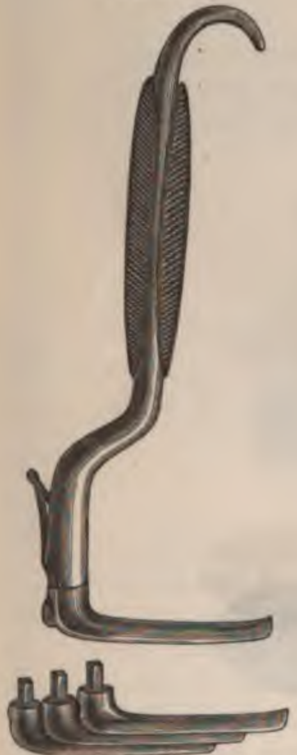


Simon's Speculum, different sizes.

Appearance of the Os and Cervix in the Virgin.

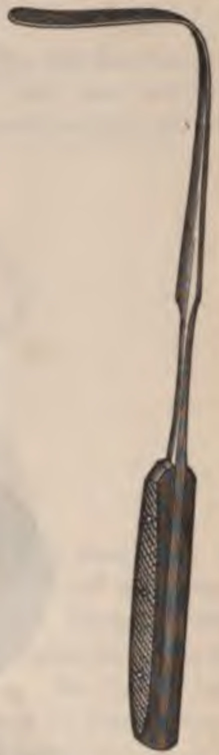
The virgin uterus is small; the cervical end is nearly round, and terminates in a truncated extremity. Through the speculum it does not present the appearance of labial projections, and the os is either a small slit, about a quarter of an inch long, or a round opening into the middle of the truncated extremity. It is about large enough to admit with facility the end of a female catheter, and the neck projects, in relief, from the bottom of the parts exposed by the speculum, something like half an inch.

FIG. 81.



Simon's Retractors.

FIG. 82.

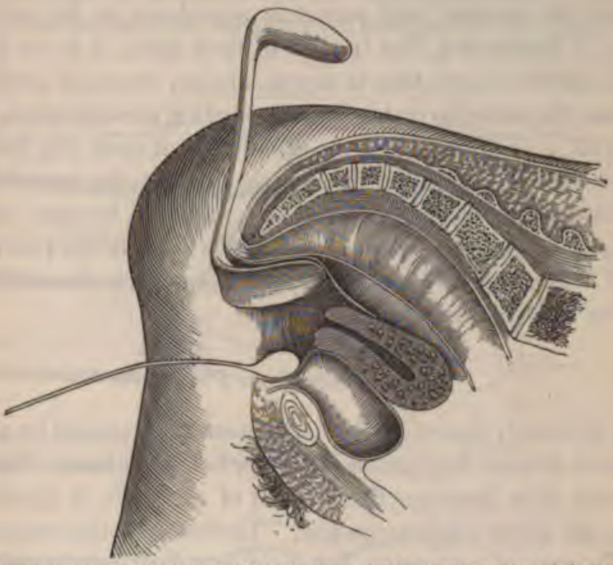


Lever for Dilating the Vagina from the Side.

Appearance of the Multiparous Uterus.

The appearance of the multiparous uterus is quite different from this; the cervix terminates in labial projections, which divide its extremities into an anterior and posterior half, and it does not project with so much prominence into the speculum. The os is represented by the cleft between these labial projections, and is large enough, in many instances, to admit the tip of the index finger.

FIG. 83.



This figure represents the Action of the Instruments in Sims's method of Examining the Uterus.

Appearance in the Aged.

In the aged the labial projections seem to have atrophied to obliteration, and the speculum shows a round opening in a funnel-shaped depression, surrounded by the walls of the vagina.

Exceptions to these Appearances.

Although the above is an accurate description of these appearances under the different circumstances, there are many natural deviations from it.

Color.

The color of the mucous membrane covering the cervix, and entering the os uteri, may be compared to that of the inside of the lips of the mouth, a pale rose-red.

Appearance of Secretion.

The parts are merely lubricated, not smeared or inundated, with mucus. There is just enough of this secretion to keep the membrane moist, but not enough to hide the surface from view. I speak now of the cervix uteri.

Indication of Mucus in Abundance.

An abundance of mucus must be regarded as an evidence of excitement; its constant and persistent abundance as an evidence of disease. "Remember, that in spite of their name, it is not the business of mucous membranes to secrete mucus; the more perfect their condition, the more favorable the surrounding circumstances, the less they do so. . . . The greater the diminution of their life, the greater the secretion." The more disease, the greater the secretion, until their integrity is destroyed, when the secretion becomes modified. The source whence this mucus is derived will show the point of disease; if it comes from the os uteri, the disease is in the cavity of the cervix or body of the uterus.

Indication from Pus.

It is extremely doubtful whether pus can be produced by a mucous membrane without destruction of the epithelium at least. Temporary congestion often increases the amount of mucus to be found in the vagina, but gives origin to no pus. The color of the mucous membrane, in cases of congestion, is a livid or a dark purple-red, instead of the scarlet of abrasive inflammation.

Probe and Speculum Conjointly.

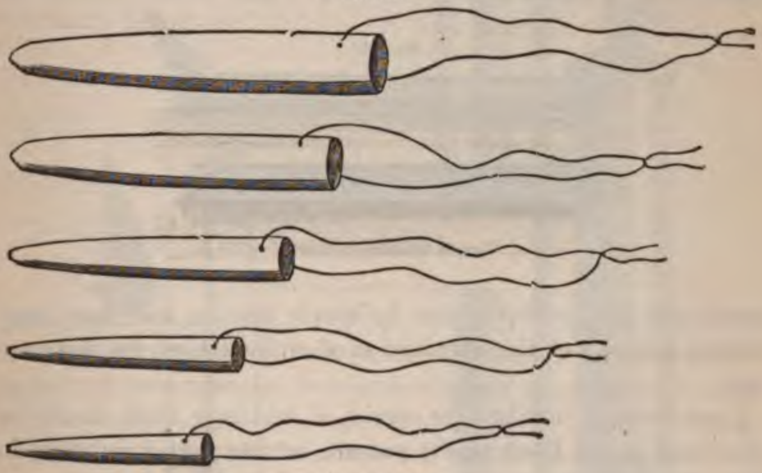
When the neck of the uterus is exposed in the speculum, it will often be profitable to use the probe. If proper attention is paid to appearances under the use of the probe, much information may be gained. When the mucous membrane of the cavity of the cervix or body is inflamed, it is generally much more fragile than natural, so that it bleeds upon slight contact with the end of the probe. In cases where the inflammation extends to the cavity of the uterus, the probe passes the os internum without obstruction, and passes farther up than natural from the increased size of the cavity.

Dilatation.

By properly dilating it, we may subject the cavity of the uterus to a digital examination. Sufficient dilatation may be effected by the use of tents and dilating instruments made for the purpose. The compressed sponge, laminaria, tupelo, and slippery elm tents are all employed as means of dilatation. The sponge tents, as prepared and sold by instrument makers, are of various sizes and lengths. They are, or ought to be, perforated lengthwise, carbolized, and covered with a lubricant to facilitate their introduction.

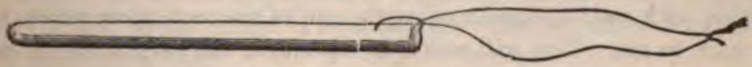
The sea-tangle or laminaria and the tupelo tents should also be of different sizes and lengths, smoothly polished, and very slightly tapering. All of these materials are susceptible of being made in a flexed form to suit the curves of the uterus. When any of these tents are introduced in a dry state into the uterus, they absorb the moisture of its cavity and increase in size, and as they do so they dilate it.

FIG. 84.



Sponge Tents.

FIG. 85.



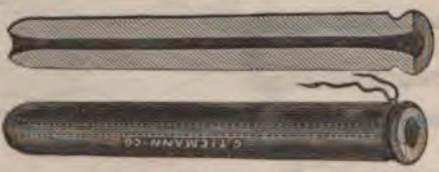
Laminaria Tent.

The sponge expands more rapidly than the lupelo or laminaria tents, and is less powerful in its dilating influence. There is not much difference in these respects between the tupelo and laminaria tents. Perhaps the latter expand more strongly and act more powerfully.

As the sponge dilates, it presents a rough surface to the mucous membrane, and to a considerable extent impairs its epithelial covering. The surface of the tupelo and laminaria tents do not become rough as they expand, and consequently are not so likely to be followed by injury to the mucous membrane. As the laminaria becomes moist, it exudes a mucilage that serves as a protection to the mucous membrane.

All of these tents should be well secured by having a strong thread attached to them. The thread should be passed through the whole length of the sponge and tied in a loop. This thread enables the practitioner to remove the tent by simple traction, and does away with the necessity of the introduction of an instrument for that purpose.

FIG. 86.



Tupelo Dilators (hollow).

Tents intended to dilate the cervix, of whatever kind, should be introduced at the home of the patient, because perfect quietude in bed is one of the best measures to prevent the untoward effects sometimes caused by the use of them.

Sims's position is the most convenient for the introduction of the tent. In this position the cervix may be exposed by Sims's speculum, drawn slightly forward, and fixed by the uterine tenaculum or a small vulsellum (Fig. 87). The tent, mounted on a tent-holder, or seized by the dressing forceps, is passed in until the inner end has entered to the os internum. The upper part of the vagina must be packed with cotton placed against the end of the tent, upon which it is made to rest. This will secure it in position, otherwise it might be more or less completely dislodged and thus fall short of its fullest effects. The first tent should be of a size that will permit it to pass easily into, and yet snugly fit the cervical cavity. If sponge, it will generally require about twelve hours to fully expand, and should the dilatation not be sufficient to admit the finger, the vagina and cervical cavity should be thoroughly cleansed with carbolized water, and a second sponge introduced in the same manner as the first. The second tent must be large enough to fill up the expanded cavity, and secured in the same way as the first. A somewhat longer time must be allowed if we use either of the other kinds, but the management of them is the same as that of the sponge. The wounded condition of the cervical mucous membrane caused by the sponge tent renders it very susceptible to inflammation, and calls for the strictest quiet and the avoidance of all co-operating morbific causes. The same condition favors the absorption of septic material, and thus exposes the patient to the danger of septicæmia. This can only be avoided by strict cleanliness.

FIG. 87.

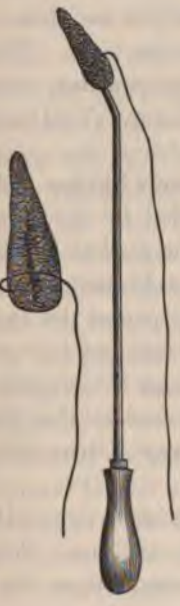
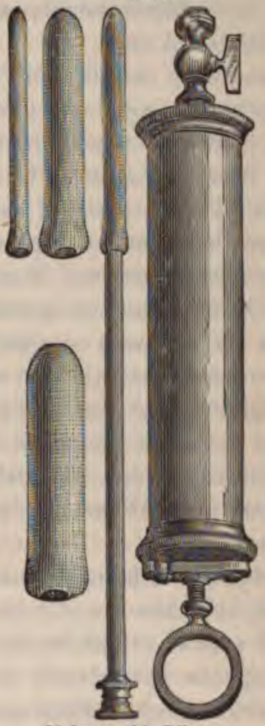


FIG. 88.



Molesworth's Dilator.

In using the tupelo and laminaria tents, the main danger consists in the liability to produce inflammation of the uterus, which may be propagated to the surrounding tissue, because of their very unyielding pressure upon the submucous structures of the organ.

From these considerations the student will learn that the use of tents is fraught with much danger, and should not be resorted to except under such circumstances as seem to render them indispensable to correct diagnosis and a perfect course of treatment.

There are other means of dilating the uterine cavity, that in some cases may be resorted to with much advantage, especially when it is an object to perform dilatation in a short time.

Molesworth's dilator is one of the most simple and effective instruments for this purpose. The small-sized dilator may be made to enter the unimpregnated uterus, and when expanded by filling it with water, under strong and gradually increasing pressure of the cylinder, will, in favorable instances, open the cervical cavities sufficient to admit the second size.

By succeeding one size with another I have, in less than an hour, been able to pass my finger into the cavity of the body. The uterus can also be dilated rapidly by hard rubber instruments, a very convenient form of which is Hank's rapid dilator. This consists of olive-shaped bulbs mounted on a handle.

The smallest size may be passed into the cervix by slow and gradually increasing pressure. It may be succeeded by the second, and that by the third, and so on until the cavity will admit the finger.

When the uterus is especially hard and undilatable, the gradual method, consisting of the use of tents, is the proper one to employ. When, however, the mouth of the cervix is softer and more yielding, the rapid method is preferable, and in most cases Molesworth's is the instrument to be used. I would remind the student that great care is necessary to avoid damage from the use of any of these instruments or processes.

The object in dilating is to expose the uterine cavity to the sense of touch, and thus discover its contents and condition. Sometimes, with the patient in the dorsal position, we may depress the uterus, by placing one hand above the symphysis, sufficiently to bring its cavity within reach of the finger; but usually it will be necessary to draw it down by a tenaculum or vulsellum until the finger will pass up to the fundus.

Polypoid or submucous tumors, excrescences, and cancerous ulceration may be discovered in this way when they could not be diagnosed with precision by any other method of examination.

Characteristic Signs of Inflammation.

The signs of inflammation of the submucous tissue or substance of the neck of the uterus are, increase of size, tenderness, and generally hardness; of the mucous membrane, increased color and secretion; of ulceration, still more intense redness, purulent discharge, tenderness, and not much enlargement. The former conditions may be ascertained by the touch, the latter by the sight, and when they are mingled, by both combined. Open external abrasion or ulceration of the uterine cervix, after the parts are well exposed, *and cleared of mucus and pus* by wiping, cannot be well mistaken or overlooked; and the practitioner must not be led to believe the case one of no importance because the ulceration is not very extensive. This raw scarlet surface is always indicative of mischief, and we should expect any amount of suffering from even a small patch of it.

Diagnosis of Endocervicitis.

There are cases where the appearances are not so obvious, where, in fact, all the parts exposed by the speculum and within reach of our vision have a natural appearance. No redness, rawness, or other discoloration can be detected on the neck, in the mouth of the uterus, nor on the vaginal surfaces; they are quite healthy in appearance and reality, but there is an obvious and, in many instances, a copious secretion of tenacious mucus flowing from and lying in the os uteri; wipe this away and all looks right. This is a case of endocervicitis. In some instances this mucus is colored with streaks of yellow by the presence of pus, or it is wholly yellow; here there is loss of integrity in the epithelium of the cervical cavity. The mucous membrane in the cervical cavity is ulcerated. If we remember that the mucous membrane secretes only enough mucus for lubricating purposes, in the natural condition, we can arrive at no other conclusion than that the membrane is in a state of hyperexcitement when its secretion is abundant or altered, or both. When we see mucus in even small, yet perceptible quantities, issuing from the anus, what is the inference? If this is abundant, persistent, and colored yellow, however healthy the anus might appear externally, we could not believe that the rectum was in a healthy condition. Why not then positively determine that the mucous membrane is inflamed, which floods the os uteri with mucus or pus, or with both? If we introduce the probe into the cavity of the cervix thus abundantly secreting, the patient will nearly always complain that we touch a "sore place, a tender spot," that it hurts her in her back, etc. And very often blood will immediately follow the withdrawal of the instrument. This, however is not invariably the case. Another diagnostic evidence of endocervicitis is the increase of the pain ordinarily experienced by the patient when the probe or nitrate of silver is introduced.

The hypersecretion, or perverted secretion of the mucous membrane, must then be regarded as an indication of disease of that membrane. If we have these facts fixed in our mind, and if we act upon them, we may discover and cure disease that would otherwise escape our attention and thwart our skill. But there is another obvious and common-sense sign of inflammation which has not been applied in our investigations of diseases of the uterus, viz., tenderness. Tenderness or sensitiveness to the touch anywhere else leads us to suspect inflammation, but in the uterus it is unaccountably set down as indicating an irritable uterus and not an inflamed one.

Diagnosis of Submucous Inflammation.

I think when I touch the uterus with the finger or an instrument, and the patient shrinks from the contact and says "she is sore," or "it is sore," that there is inflammation there. Tenderness is not an evidence of mucous inflammation, but of submucous or fibrous inflammation of the uterus.

Complication of Mucous with Submucous Inflammation.

The uterus should be examined by the same diagnostic rules that govern our investigations of disease in other organs. Some authors tell us that ulceration results from inflammation of the submucous tissue, and others that the inflammation begins in the mucous membrane. However this may be, I am sure that inflammation sometimes exists in both these tissues at the same time. In this case we shall have tenderness and hypersecretion. At other times there is submucous without mucous inflammation; then we shall have tenderness without hypersecretion. Again, we may have mucous without submucous inflammation, when hypersecretion without tenderness will indicate it. These remarks will fix the importance of these two symptoms as indicating the seat of the disease.

Size of the Uterus ordinarily Increased—Exceptions.

The size of the organ is one indication of the presence or absence of inflammation; but this may vary very much under what would appear to be the same form of disease. In endocervicitis it is usual to find the cervical canal increased in calibre; but this is certainly not always the case, as I have met with unmistakable instances in which this cavity was decreased in size and the os uteri almost closed, it being so small as to admit only a very small probe. Where there is mucous inflammation of the cervix extending toward the cavity of the body, and more particularly where the disease extends into the cavity of the body, the whole organ is likely to be enlarged. So much enlargement sometimes takes place that the fundus may be felt considerably above the pubis. Neither is this always the case, however; often there is no enlargement. The hypertrophy, or general enlargement of the organ, is more frequently indicative of mucous than submucous or fibrous inflammation.

Atrophy as the Result of Inflammation.

In fact, I think that long-continued inflammation of the substance of the body and cervix often brings about atrophy or shrinking of the uterus. Permanent increase of size or hardness of the cervix must be the result of submucous inflammation, and generally coexists with it.

Almost the only disease with which chronic inflammation and ulceration of the cervix uteri are likely to be confounded, is cancer in some of its stages. The many well-marked symptoms and physical conditions which accompany this last disease are now, however, so well understood and so thoroughly described, that the novice need not be embarrassed in his diagnosis of it.

I find in Becquerel's *Traité Clinique des Maladies de Uterus*, pp. 320–323, vol. i, so complete and faithful a diagnostic summary between cancer and the different conditions of chronic inflammation of the cervix, that I have translated and given its substance for the concluding portion of this chapter. It is subjoined:

Cancer in the Scirrhous Condition.	*Inflammation and Ulceration.*
Cervix hard, unequal, nodulated; os not always open, sometimes wrinkled or furrowed.	Neck less hard, developed regularly in one of the lips; os always open.
Scirrhus of the neck often implicates the vagina.	The induration of the neck never extends to the vagina. Mobility of uterus complete.
Hereditary influence is often traceable.	No hereditary influence.
Touch is painless.	Touch painful.
Discharge sometimes absent; in certain cases very abundant, and consisting, for the most part, of albuminous serum.	Discharge constant, and characterized by the presence of transparent mucus, muco-pus, or purulent mucus.
Menstruation increased, being neither more nor less painful, and passing often into the state of real hæmorrhage.	Menstruation more painful, often retarded, almost always scanty.
Absence of special anæmia when the vagina and body of the uterus are involved. Cancerous cachexia.	Special anæmia, as above described.

Cancer in the Scirrhous Condition.	*Inflammation and Ulceration.*
Progress continuous and without cessation.	Often stationary for a long time.
The pain in cancer is very sharp, intense, and lancinating, and not influenced by locomotion or movements of any kind.	Pains less severe, more dull, and perceptibly influenced by walking and other sorts of motion.

Ulcerated State.	*Chronic Inflammation and Softening.*
Developed at the critical period of life generally.	Occurs earlier in life almost always.
Preceded and accompanied by hæmorrhages.	Not preceded by hæmorrhage.
Severe, sharp, lancinating pain.	Pain dull and profound.
Development essentially in sharp irregularities and nodosities.	Enlargement regular and rounded, or regularly lobulated.
Adhesions to other organs as soon as ulceration is formed; immobility of the uterus.	Complete absence of adhesions to other organs. Entire mobility of the neck and body of the uterus.
The surface only slightly soft; subjacent tissue scirrhous.	Tissue of the cervix not hard, and easily destroyed.
Ulceration deep, unequal, essentially irregular, with thick, elevated, and hard edges.	When ulcerations exist, less deep, with tumefied edges.
Always granulations.	Granulation often accompanies the other lesions.
Discharges extremely abundant, consisting of purulent and often sanguineous serum; nauseous and often fetid odor.	Discharges less abundant, consisting of muco-pus alone, or accompanied with a little blood, without odor.
Great hæmorrhage from time to time, not necessarily at menstrual period.	Always hæmorrhage, but often a mere prolongation of the menstrual discharge.

Cancerous Ulceration.	*Simple Ulceration.*
Developed upon a hypertrophied and scirrhous surface.	Ulceration often on a healthy tissue, or presenting the soft or hard varieties or inflammatory injection.
Ulceration deep, vast, unequal grayish surface, with thick edges, and easily bleeding.	Ulceration more superficial, the edges less developed, and more regular at the bottom, not always easily made to bleed.
Ulcerated surface hard, presenting numerous lobes and tubercles, with nodosities and great hardness.	Nothing of the sort in chronic inflammation and ulceration.
Often great loss of substance.	Ulceration is not always accompanied with loss of substance.
Cervix and corpus uteri immovable, on account of adhesions.	Neck and body always movable.
Discharges sanious, fetid, sanguinolent, and of an insupportable and characteristic odor.	Discharge of muco-pus, or purulent mucus, always more or less abundant.
Cancerous cachexia always present.	Special anæmia.

"Professor Otto Spielberg, speaking of the difficulty of distinguishing between simple inflammatory induration of the cervix uteri—hyperplasia—and carcinomatous infiltration, gives the following as a certain indication of cancerous infiltration, viz.: '*A peculiar induration of the cervix, the disposition of its mucous membrane, and its reaction to the dilatation of sponge tents.*' He expounds each member of this rule.

"The hardness of cancerous deposit, in comparison with simple induration, is well known; but the distinction is frequently impossible to make out, even by the most cultivated touch. The two other symptoms are unequivocal, and are as follows:

"'First, the mucous membrane in cancerous growth is firmly connected with the underlying induration, and immovable over it, which is not the case in mere hyperplastic thickening and induration; and, second, while the latter, under the pressure of compressed sponge, in the cervical canal, becomes regularly even, though at times inconsiderably looser, softer, and thinner, the cancerous infiltration remains unalterably hard and rigid, and cannot be stretched.' He goes on to explain the reason for this difference between the products of the two inflammations from the locality where the cancerous inflammation originates, which is the utero-malpighii; or, in extremely rare cases, from the glands of the cervical canal. The latter form gives rise to the alveolar or colloid form, of which he has only seen one case. As a rule, the disease is developed from the interpapillary depressions of the epithelium. According as the growth of the epithelium into the tissues below is or is not attended by a simultaneous growth of the papillæ, two forms of cancer may be distinguished,—the papillary velous, or cauliflower excrescence, and the simple infiltrated form."—*Cincinnati Clinic* (*from Archiv fur Gynækologie*).

CHAPTER XVII.

GENERAL TREATMENT OF UTERINE DISEASE.

General Treatment.

I AM sensible of the great difficulty of properly estimating the value of any given remedy or plan of treatment for the cure of disease. Nature does very much sometimes to aid imperfect means, and even to effect a cure under improper treatment, and very often we record cures and attribute great efficacy to our plan of management, when the favorable termination is due alone, and perhaps in spite of us, to the natural conservative energy of the system or the parts concerned; while at other times the circumstances inseparable from a case thoroughly thwart the best-directed efforts. It is often a mistake, therefore, to be too sanguine in our expectations even with the use of a favorite course of treatment, or to depreciate everything which has not fulfilled our hopes. We should patiently, honestly, thoroughly, and judiciously try every means within our knowledge for the benefit of our patient, let him labor under whatever disease he may. The reader is, doubtless, perfectly aware of the very great differences of opinion in the profession as to the treatment most beneficial in inflammation of the cervix uteri and its accompanying ailments. In alluding to these many and diverse opinions, I must record my conviction of the honesty with which they are maintained by the principal disputants of the present day, and must exhort the junior members of the profession to cautious and thorough research on the subject. There must be a right and a wrong side to every disputed question; and, as a general thing, extremists are wrong. Remembering this general truth, we cannot always be kept in doubt by the facts in the case, if, without prejudice or party bias of any kind, we earnestly set to work to learn.

Spontaneous Cures.

Are there any spontaneous cures in these cases? I think there are, and I propose inquiring into the method adopted by nature, and take it as a guide to some extent, at least, for the plan of artificial treatment. Change of circumstances frequently makes robust persons of invalids. This change is generally from irregular, improper habits of living to such as are regular and appropriate; from the highest state of luxury and ease to one of need, or, at least, economy and industry, in which the patient must exercise her mind and muscles to a proper degree. The healthy tone of the stomach, muscles, and brain, thus brought about, decreases the susceptibility to slight suffering, enables the patient, apparently, entirely to recover from disease, and bear small ills without complaint. I need not specify the various circumstances and conditions of life which improve the tone and elevate the functional activity of the whole organism; they are numerous, and will suggest themselves to the reader. How many journeys are taken, how much time spent at watering-places and places of amusement for this purpose? And often they answer the purpose, and the patient is restored to health.

Change of General Circumstances only Temporary in its Effect.

This improvement in cases of disease of the uterus is brought about rather by diminishing the nervous susceptibility to the wearing influence and pain of the local disease, and by fortifying the system against its advance by establishing excellent general health, than by actual cure of the local inflammation. As a consequence we find a return to the former mode of living, habits, and circumstances, reproduces, more or less rapidly, the same train of general symptoms, and makes it necessary to resort to a repetition of the journey, or whatever other means were previously successful for their removal. This is only an apparent, not a real cure, and is the kind which always results from an exclusive general treatment. Tonics, laxatives, and alteratives put the general condition of the patient on a better footing, and she suffers less from her local disease, and even considers herself well; but if we suspend the general roborant appliances, the patient again sinks into her former state of valetudinarianism. I have often witnessed these changes as the effect of accidental mutation in the condition of the patient, intentional changes of place and circumstances, or well-advised general treatment.

Supervention of Acute Inflammation.

There is, however, another method resorted to by nature, which sometimes results in a permanent and complete cure. Chronic inflammation has very little tendency to spontaneous subsidence; its duration is at least indefinite. Situated in the neck of the uterus, this is particularly the case. Acute inflammation, however, on the contrary, has a strong tendency to terminate in resolution, to subside and leave the parts in a healthy condition. And, in cases of chronic inflammation in any of the organs, the supervention of the acute form proves sometimes salutary. It absorbs the whole chronic action and takes its place in the tissues; and as it subsides, the diseased organ is left in a healthy condition. We have an opportunity of seeing this process of usurpation, displacement, or whatever else it may be termed, in diseases of the eye, and witnessing the salutary sequence.

Acute Inflammation after Parturition or Abortion sometimes works a Cure.

Some of the functions of the uterus when naturally performed are followed by acute inflammation in the neck of the organ. I allude particularly to parturition; and while these inflammations sometimes linger and become themselves chronic, they generally, under favorable circumstances, subside kindly, and where the cervix had previously been affected by chronic inflammation, sometimes favorably modify if not entirely cure it. I think that very few cases of parturition occur that do not cause sufficient violence to the cervix and os uteri to be followed by a greater or less degree of acute inflammation. A great many are certainly thus followed. The acute inflammation resulting from abortions occasionally has the same effect. Instances have occurred in the hands of the most experienced practitioners, where the uterine health of a primipara has been benefited by pregnancy and the processes of parturition.

Posture, Exercise, and Repose.

The young practitioner will soon learn that posture and exercise are important considerations in the general treatment, and he will be taught by most writers that the reclining posture and strict quietude must almost universally be observed. Walking generally causes an increase of pain, and, it is natural to suppose, an increase of inflammation; so that exercise on foot or in the erect position is regarded as injurious. On the other hand, confinement to the recumbent posture and the observance of strict quietude is very hard upon the general health; the patient becomes more nervous, and all her functions are performed in an irregular and imperfect manner. As a consequence, in very many instances, the symptoms are much aggravated. In the great majority of these cases, therefore, I think the patients are injured by confinement and recumbency. It would neither be scientific, sensible, nor successful, however, to lay down any absolute rule in respect to exercise and quietude. I think we may arrive at pretty accurate conclusions as to the sort of cases and the conditions under which each should be observed. More than ordinary acuteness of the symptoms, indicating a high degree of inflammation, occurring in the beginning and continuing throughout, or arising during the progress of a case, as the effect of temporary causes, will make rest indispensable to the removal of them. Hæmorrhage at the time of menstruation or between the menstrual periods is also a reason for strict quiet. Where neither of these conditions are presented, I think the patient will be much benefited by judiciously directed exercise. I feel like insisting upon the enforcement of outdoor exercise as a rule in these cases; for I have often had an opportunity of contrasting, in the same cases, the influence of quiet and exercise upon the recovery of patients of delicate nervous constitutions. One patient who had been unable to sit up for even a short part of the day for several months, on account of the pain in the hips, dragging in the loins, and great nervous prostration, was sent to a water-cure, and in three months she returned home capable of walking several miles a day, and enjoyed comparatively robust health. In a few weeks after returning to a home in which she enjoyed the luxuries and ease so desired by all who prize good living, she became "miserable," and was obliged to abandon her exercise entirely. It is encouraging to state, that in less than six months of proper local treatment, she was permanently cured. This is but a type of many similar cases that have been benefited by the enforcement of exercise and other items of proper living, but, I must also add, not cured. It has been my constant aim for many years to induce patients of this kind to take as much exercise as they can bear. Under the mistaken notion that any local pain indicates an aggravation of their disease, and that to exercise when it gives them pain, even to a moderate amount, is a great evil, they confine themselves to their room, and even their bed, to the forfeiture of that healthy tone and energy of the nervous system which shield them from the intolerable and inexpressible *ennui*, melancholy, and irritability, which are so characteristic of bedridden women. Pain and weariness, that subside after a few hours' rest, should not be regarded; it is only in those cases in which the pain and weariness increase at every effort at exertion that exercise should be abandoned, and then we should insist upon its being resumed again as soon as sufficient advance in the cure has been made to justify another attempt. We should not tire, during the whole treatment, in our endeavors to institute a system of regular and gradually increasing exercise, on account of the consideration that it is indispensable to the enjoyment of useful and comfortable health. Selection of the kind of exercise will depend, of course, upon the condition of the patient in respect to pecuniary matters as well as the state of her disease. Fortunately, the best kind is such as is within the reach of every kind of patients, not excepting those who are under the necessity of earning a living. The capacities and demands of our nature are formed to answer the curse pronounced against Adam. We not only earn our bread by the sweat of our brow, but the labor necessary to procure the bread brings almost all the conditions that insure health and happiness. It is, in fact, a great evil of the present state of society that our ladies cannot find in useful employment that healthy exercise for the body and mind which they need, and that such exercise and employment are allowable and acceptable only in amusement. There is almost no variety in mental and corporeal exercise required by the highest social amusements, and it is only when we descend to the primitive sports that our demands in this respect are met. It is undignified in ladies to fish, hunt in the woods, or engage in muscular feats. They must for muscular exercise engage in the measured sameness of the quadrille, or the giddy whirl and violence of the waltz, or cramp their limbs to the steady routine of a system of calisthenics. What are all these, for variety and adaptedness to their wants, compared to the washing, ironing, sweeping, milking, churning, spinning, weaving, cooking, walking, running, of household engagements, the stimulus of need; thinking of all these things; timing them; proportioning them; calculating, economizing, nursing, doctoring, advising, correcting, teaching, and conducting little minds and bodies through the physical, moral, and intellectual discipline which capacitates, unfolds, and imbues them with what is good and useful? Woman's duties, taking them altogether, when well and appropriately performed, will do more than all the amusements that can be invented to keep woman well and healthy in every particular. In fact, it is only woman thus employed that can enjoy amusements. To the woman that constantly seeks after amusements, these very amusements become an irksome and toilsome business; they have a disagreeable sameness, and do not divert her; they simply vitiate her tastes. We all want variety, and constant employment, with a *sense of usefulness* attached to it. With this view of the usefulness of mental and bodily labor, I encourage my patients to engage in their domestic duties and labor, gauging the amount of labor by their capacity of endurance. Attention to the homes of wealthy women, as society is now constituted, requires a great deal of anxiety and mental exercise. Without a proper variety of muscular exercise, the woman, in attending to the duties connected with it, becomes more nervous; but the home of the poor industrious citizen or farmer gives enough, and a healthy variety, of both muscular and mental exercise to promote health and happiness. Should there be such objection in any shape as to make this course impracticable or improper, it is an interesting question to decide what sort of physical exercise is most desirable and beneficial. I am decidedly in favor of exercise on foot, outdoors, as one of the very best kind, far preferable to carriage or horseback riding. Carriage riding is not sufficient exercise for the most of such patients, and yet those who are most debilitated, and utterly unable to walk, may be much benefited by riding in an open carriage until they become vigorous enough to walk, when it should be abandoned. Convalescent patients may ride on horseback if they can have an easy-going animal; but this sort of motion is too violent; there is too much jolting for such cases until nearly or quite cured of the local trouble. We ought to induce our patient to walk more each day than the previous one, if possible, until she has plenty of exercise.

Sexual Intercourse.

Young physicians have often asked me whether sexual intercourse is injurious during the time of treatment, and whether it should be permitted? I have no hesitation in insisting upon entire abstinence from this act. The recovery of our patient will be more rapid, certain, and complete when this is observed, and I believe that failures are the result of carelessness in this respect. It is very common for our patients to enjoy more comfort when absent from their husbands, and come home from a journey, as they think, entirely cured, to be assured of the contrary by the first effort at coition, and become miserable with pain, nervousness, etc., in a short time on account of indulging in this conjugal act. I desire, therefore, to be explicit in warning my young friends in the profession not to omit the interdiction of sexual intercourse, however delicate the task. A private interview should be sought with the husband for that special purpose.

Main Objects of General Treatment.

The main object to be gained by general treatment is to palliate the general condition of the system, to aid the local in effecting the cure, and to remove, when practicable, the effects left after a cure of the local disease. *A cure* of local chronic disease, by general treatment alone, is hardly to be expected, although, in some instances, it may be indispensable to such a result. When general treatment is used as a palliative or adjunct in local diseases, it is directed to the relief of general symptoms attendant upon them. It will be impossible for me to notice the treatment necessary in all the symptoms which attend and add to the distress of our patients in uterine diseases, but there are certain prominent and troublesome ones on which I cannot with propriety omit to dwell. I do so the more readily from the embarrassment which I know, from experience, fills the mind of the inexperienced as to the proper value to place upon general treatment and the course to be pursued.

Many of the patients laboring under chronic uterine disease come to us broken down, the subject of a multitude of symptoms resulting from inanition and depraved functions. These prostrated patients, it will be found, have passed through the primary sympathetic suffering I have elsewhere described, and are in the midst of that condition we have been in the habit of calling nervous prostration, in which general treatment becomes a very important, if not an essential, means of success. This general treatment consists in the correction of the condition of the organs which were first sympathetically deranged,—the stomach and its associate organs,—introducing into the system nutritive material enough to relieve the anæmic state of the nervous centres, and conducting the patient back to her long-lost habits of activity. I have elsewhere expressed the opinion that the primary morbid condition of these organs is functional derangement, and, perhaps, always deficiency of their secretions. One of the first and most important things to be done is to correct this derangement, and the two medicines that have occurred to me to be the most efficient are mercury and nitro-muriatic acid. Mercury has always, and very deservedly, had the reputation of exciting the glands connected with the alimentary canal, viz., the salivary, gastric, duodenal,—liver and pancreas,—and those of the large intestine. Administered in small doses, this excitement does not transcend the limits compatible with health; but given in larger doses, it produces inflammatory excitement in all of them. We can very properly avail ourselves of this quality of mercury in such a manner as to increase the action of all these glands, and thus promote the appetite and digestion and assimilation. It is, in this way, an efficient tonic, increasing the red blood-corpuscles and establishing a plastic habit so desirable in chronic diseases. To these broken-down patients I am in the habit of administering it in the form of blue mass or the bichloride; of the former one-fourth of a grain four times a day, or one grain at bedtime. When I give the bichloride, I generally dissolve it in the compound tincture of cinchona, one-sixteenth of a grain of the mercury in a tablespoonful of the tincture three times a day, after meals. These doses are too small for some patients and too large for others. When not large enough, they are not attended with any appreciable results, in which case a slight increase will be necessary. When the dose is too large, it usually causes diarrhœa. When it produces this last effect, it should be withdrawn and the acid substituted, which should be given in very small doses.

Dr. L. F. Warner, of Boston, wrote an article in advocacy of the use of mercury in the treatment of uterine disease for the obstetrical section of the American Medical Association. It was published in the *Transactions* of 1878. Dr. Warner brings forward cases to show the efficacy of this drug, and the article will repay perusal.

It should be remembered, however, that medicines are but prompters to nutrition, and that to reinstate the lost vigor the patient must be fed. Her anorexia should be no excuse for starvation; food should be taken in sufficient quantities to nourish her, with as much persistence and regularity as she takes her medicine. If we wait for an appetite, starvation will go on; and if we wait until digestion is comfortable, we may often wait until inanition establishes tuberculosis, leucocythæmia, or some other equally fatal disease.

We ought to prescribe and particularize what, in our judgment, is necessary, and insist upon its being taken. About the only reason for withholding any article of diet indicated is the rejection of it. Digestion is likely to be attended with discomfort of some kind, such as fulness, cardialgia, pyrosis, etc.; but as the blood becomes better, by virtue of its tonic influence upon the organs, the secretions in the stomach will improve, its muscular coats become stronger, bile becomes normal in quantity and quality, and the digestion will be complete, easy, and comfortable, and the patient will regain her strength.

The articles of diet which can be tolerated will not always be the same. When I say tolerated, I do not mean desired and digested with comfort, but I mean such as will not be rejected from the stomach, for if they are not vomited up, and do not cause diarrhœa, they will be digested, and hence be the source of nutrition.

As concentrated food and generally the most nourishing, are the different kinds of animal food; beefsteak, roast beef, mutton chops, roast or boiled mutton, milk and eggs, butter, etc., constitute a good assortment from which to choose and prescribe.

In prescribing meat in any form, we will generally be met with the objection: "I do not eat meat; I do not care for meat; I have no appetite for it." I sometimes think, as medical men, we ought to reject the word appetite from our vocabulary. These patients usually have no appetite, and for that very reason are starved. If we do not prescribe the very articles we want them to take, the exact quantity and the time for taking them, they will generally disregard our directions. We may tell them to take two ounces of beefsteak or mutton chop for breakfast, the same quantity for supper, four ounces for dinner, with bread and butter, vegetables, and every such other thing as they wish, but always the meat. Then if we prescribe one pint of milk after each meal, and one at bedtime, the patient will have a good strong diet, and it will soon be apparent in her improved condition. The nurse should be responsible for the taking of this prescription as she is for the administration of medicines.

Some patients cannot chew their meat, but can swallow and digest it if it is minced finely. It will digest in this form usually very perfectly.

General Symptoms requiring Special Attention.

The symptoms, the treatment of which I propose to speak of in detail, are: 1st, general nervous prostration; 2dly, nervous excitability, exaltation of nervous excitement; 3dly, anæmia; 4thly, general plethora; 5thly, local plethora; 6thly, constipation; 7thly, indigestion. These are generally more or less complicated with each other, and sometimes several of them coexist; but, ordinarily, some one assumes the most prominence, and occasions most distress, and consequently requires more of our attention than the others.

Nervous Prostration.

There is often great nervous prostration, and a sense of weakness, when, so far as we can judge, hæmatosis and nutrition are usually well performed. The cause of this depression must be sought out in each case, as there is no uniformity in the functional deviations. Very frequently there is a deficiency of menstrual discharge, the scantiness being very obvious; at other times it is too copious. We should inquire into the functions of all the important organs, and correct them, when disordered, as nearly as possible, by changing the habits and circumstances of the patient, and afterward, or in connection, address remedies to the organs themselves. The stomach, liver, bowels, skin, kidneys, and uterus should furnish their discharges in the most natural manner, and if they are not doing so, should be corrected by the most gentle means. If several of these organs are in a state of functional deviation from health, we should not expect to correct them all at one time, but alternate our attention between them; first, with our remedies influencing one, and then another. I insist here, with reference to the plan to be pursued, that we should not address all these organs, or even a large part of them, with medicinal agents at one time. There is no question, I think, that complicated formulæ often nullify themselves by containing ingredients intended for the liver, kidneys, and skin, which ought all to act about the same time. We should act upon each of these alternately, in quick succession, if we think best; but let each organ feel the full impression of its remedy before the blood and nervous energies are directed to another. In addition to this indirect way of increasing the tone of the nervous system, it is natural for us to look about for something that will act more directly. Our patient becomes so depressed, and suffers so much from terrible feelings of prostration, that her condition appeals to our sympathies for a more direct and immediate relief. If left to themselves, or the advice of injudicious friends, they almost always resort to stimulants, as whiskey, ether, chloroform, ammonia, etc. In some cases only are these temporary remedies advisable, and when used, they nearly always leave the patient in a worse condition than before they were taken. They are allowable only as necessary evils, and should be avoided when possible. These patients are usually depressed mentally, also, and much good may be done by operating upon their minds. A physician who enters the room with a cheerful countenance, and a pleasant and gentle bearing toward the patient, and who engages her in conversation, first about her case, and afterward about some favorite theme, will do more toward temporarily relieving the great nervous and mental depression than all the ether and ammonia the stomach can be made to bear. Earnest and kind assurances that her symptoms, though causing her a great deal of suffering, are not of a serious nature, and will soon subside, act generally as a good cordial to the spirit and nerves. In paroxysms of excessive nervous prostration, despondency, etc., I have seen the tonic influence of very cold air do a great deal toward relieving them. These paroxysms generally occur in close and overheated rooms, two conditions which should be removed. If it is cold weather, we should cover the patient to protect her, and let the frosty air—the colder the better—into the room, by opening *all* the windows and doors, and keep the room cleared of visitors. It will astonish anybody who has not observed the effect of a temperature near to zero on those swooning hypochondriacs. A change almost immediately occurs for the better. If the air is not cold, it will still do much good to give it perfectly fresh to the patients in abundance. When able, they may be taken outdoors. This treatment introduces the natural stimulants, oxygen and cold, into the lungs, and brings them in contact with the nerves, and is more enlivening than medicine. How long the room should be kept open and cold will depend upon the effect, but we should always, if possible, make these patients sleep in open, cold rooms. This is a very important item, which it will often require ingenuity as well as authority to enforce. These patients should live outdoors as nearly as possible, and be as much as they can on their feet.

Food.

Their food should have reference to the condition of the abdominal functions entirely, and be regulated by them. There is generally great intestinal torpor, which should be removed if possible.* Good, cheerful company, travel,—if the patient will not employ her body and mind in domestic pursuits,—temperate and reasonable diversions, and, above all, time and patience, are requisite remedies. The affection is obstinate and chronic, and with the most judicious management will require time, if it does not vanish as the local treatment advances.

Nervous Excitability.

Connected with it often in some manner is great nervousness, excitability, irritability, or exaltation of all the nervous phenomena. This nervous irritability shows itself in great mental excitability, want of sleep, unreasonable agitation, restlessness, dissatisfaction; in short, in almost every phase of mental, muscular, or nervous excitement. There is also excitability of the different organs, with or without general nervousness, palpitation of the heart, nervous headache, local muscular contraction, etc. Successful management of these nervous and excitable patients requires a careful scrutiny into their general condition; the chylopoetic functions should be regulated in the most careful manner, the skin and kidneys should be attended to with great watchfulness. All that I have said as to general management in cases of nervous depression will apply to this kind of cases. As complete a revolution of the circumstances of the patient should be made as is practicable. From a life of ease, luxury, and absence of care, she should be, if possible, placed in circumstances requiring care, with muscular outdoor exercise to the greatest extent she is capable of. If we cannot place our patients in situations which their cases require, we can send them on journeys that will demand exertion, calculation, care, and the deprivation of their usual domestic luxuries. The remark is frequently made that we must temper our remedies to the delicacy of the patients; and I am afraid that this injunction is misconstrued into the necessity of too great tenderness of treatment. The better rule is to make use of such means as will raise the patient from her state of delicacy to robustness. It is the delicacy of her constitution that causes her to suffer so much. This can be strengthened only by proper physical, moral, and mental training. The moral and mental condition of our patients when so very excitable should be attended to. Improper reading and society should be avoided, and social and literary habits should be reduced to great plainness and simplicity. Above all things, books and society should not interfere with regular rest, exercise, and outdoor exposure. As I have said before, this last should be as great in amount as can be borne, accompanied with active muscular exercise, as walking, and should be practiced in all weathers, sufficient protection being secured by enough clothing of the right sort. With regard to the use of medicine, it is a fact, that it is an exceedingly difficult thing to find any remedy that does not produce exaggerated and in most cases disagreeable and even injurious effects. So much excitability of the nervous system nearly always modifies the effects of remedies, and we can seldom predict the operation of any of them, nor can we determine the value of any until they have been tried. When tonics can be borne, they often very much relieve and sometimes entirely cure this great nervous excitability. Of the mineral tonics, probably bismuth, arsenic, and zinc agree best. Iron is not frequently tolerated in any shape by these very nervous patients. Quinine, nux vomica, cherry, and chamomile are the best vegetable tonics, but we must not be surprised if none of them are borne. Alcoholic stimulants, in general, agree with them, and are the best cordials for temporary nervous excitement, but should be conscientiously avoided when possible, as not a few, I am sorry to say, of most estimable and intelligent women have used them too much, and engendered an appetite that could not be denied. Opium, and, in fact, the narcotics generally, fail to have any good effect, but on the contrary disagree with the patient totally. This, however, is not always the case with opium, as it acts like a charm with some. In all it should be studiously avoided as deleterious in the long run, and there is danger of creating an appetite for it. We may the more readily be persuaded to omit the use of all these medicines, as their effects are temporary, while hygienic and regiminal remedies are permanent in their effects. The management of those cases of localized nervousness or unnatural excitability in particular organs, as palpitations of the heart, nervous headache, etc., is about the same as above, except that more attention to the stomach, from which they usually arise, may be necessary.

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* See remarks on treatment of constipation.

Some forms of nervous excitement are very much benefited by the bromide of potassium. Severe nervous headache, watchfulness, and neuralgic pains are often greatly relieved by this remedy. It should be given in full doses. For headache, from thirty to sixty grains every hour until relief is obtained. For watchfulness, the same quantity an hour before and at bedtime will sometimes procure a good night's rest. When given in full doses it should be dissolved in a large quantity of water, to prevent it from irritating the mucous membrane of the alimentary canal. I have sometimes succeeded in averting the return of the syncopal convulsions described under the head of general symptoms. One patient now under my care had been the subject of them for twelve months, having them several times a month. They had become so frequent and violent as to induce the fear of epilepsy, and had been treated with many remedies without material benefit. She has been taking the bromide of potassium for six months in doses of thirty grains three times a day, and during that time has had no convulsions. She is under treatment for endocervicitis. It remains to be seen, of course, whether this improvement be permanent, nor can I say how much of the amelioration may depend upon the treatment directed especially to the uterus. It is certain, however, that the "paroxysms," as she calls them, were improved immediately upon the commencement of the bromide treatment, and before I could reasonably expect benefit from the rest of the remedies.

We undoubtedly have a valuable means of relief from the pains attendant upon the condition of many of these patients in the hydrate of chloral, while it is often as prompt and positive in the relief it affords in sleeplessness and pain. So far as I am aware, it is not followed by the very disagreeable effects that result from the administration of opium and its preparations. It, too, should be dissolved in an abundance of water, to prevent it from producing local irritation upon the mucous membrane of the stomach, as it often otherwise causes vomiting or decided nausea.

Anœmia.

Anæmia, with its disagreeable concomitants, sometimes also calls for separate treatment. It would be an unnecessary waste of time and space to enter minutely into the general treatment necessary, where anæmia is the prominent and troublesome symptom. This condition calls for the same treatment found useful under other circumstances, and, while it may not be entirely amenable to it, it will be very much benefited by the remedies indicated by the state of the blood. Iron, cod-liver oil, quinine, bitter infusions, and nutritious diet, with outdoor exercise to the extent the patient can bear, are the efficient remedies.

Plethora.

But we sometimes find general plethora instead of anæmia, a state in which there is actually an unusual amount and too rich a composition of the blood. I need not dwell upon this general state of the system, as the treatment is simple and familiar. The great fear is that, on account of the painfulness about the hips and legs, the patient may be too much inclined to an inactive life. On no account should this class of patients be allowed their ease; they must be urged to use up their surplus blood in active exercise, and the kind of exercise, next to the cares and labor of a household, best adapted to them, is walking. Every muscle in their body must be brought into action; every secretion must be kept free, and the mind ought to be taxed to continuous effort during the day by some useful occupation, while the strictest temperance, with reference to ingesta, should be their rule of living. Obesity, and the troublesome and dangerous effects of plethora, connected or unconnected with general plethora, will be thus avoided.

Local Congestions.

We sometimes meet with instances of violent, dangerous, and even fatal determinations of blood to particular organs, as the consequence of the general ill-health which accompanies uterine disease, such as stupor, stertorous breathing, etc., indicating an oppressed condition of the brain, great dyspnœa, and sense of suffocation, showing congestion of the lungs. The treatment of these congestions does not differ from what would be appropriate under other circumstances of their occurrence, and consists in revellents, alteratives, etc. The most frequent, and perhaps obstinate, of the lŏcal congestions are such as occur in the chylopoetic viscera, manifested by excessive secretion and discharges from the stomach and bowels. It is not uncommon for these patients to have suddenly recurring attacks of vomiting, cramps in the stomach and bowels, diarrhœa, and consequent great distress. Aside from the local treatment, we shall be called upon to exert our skill against the exhausting and depressing influences of these attacks. It will almost always be found that such attacks are preceded by constipation, with scanty secretions, furred tongue, and other evidence of unhealthy secretions. By carefully correcting this condition we may avert these painful and exhausting occurrences. The plan recommended and so much prescribed by Abernethy will often palliate very much, viz., six or eight grains of blue mass, at night, worked off by some saline cathartic in the morning of every fourth or fifth day. If there is more permanent diarrhœa, great care should be exercised in the choice of diet; the use of warm baths should be recommended, very warm clothing, and not much medicine, as the cure will depend upon the appropriate treatment of the local disease, instead of the treatment of the general symptoms. All these symptoms, except the diarrhœa, are apt to be moderate, and can be borne until the diseased uterus is cured; but there are two symptoms so very annoying, and which require so much patience in the treatment, and exercise so much unfavorable influence upon the uterine disease, that I hope I shall be pardoned by the reader for dwelling upon them more at length.

Constipation.

I allude to constipation and indigestion, particularly the former. I have already spoken of the deleterious influence of constipation, and I think I am justified in saying that, if disregarded, it retards the cure of chronic diseases of the unimpregnated uterus more than any other sympathetic affection. And I wish to warn the practitioner to be very particular in attending to this symptom. There is probably more tendency to costiveness in females than in males, chiefly owing to difference in habits. Sedentary life, confinement to close, badly ventilated rooms are among the circumstances that bring on this condition. Irregularity of meals, late hours, deficient sleep, concentrated diet, imperfect mastication of food, all should be corrected, as any one of them alone will do harm, and all or any of these combined—and this is frequently the case—are very deleterious to the functions of the alimentary canal. But an inexcusable and very common custom of most females is making the act of defecation a disagreeable and procrastinated necessity, instead of a pleasant and punctual duty. The most trivial excuse—the presence of friends; a little cold, hot, or wet weather; being among strangers; or a slightly inconvenient distance from a proper place—will frequently be sufficient to limit defecation to once a week; then the act is performed in a hurried manner. It is amazing to know to what lengths this negligence is often carried. I have known two weeks to have transpired, frequently, according to the history of patients, without any attempt to relieve the bowels. Now this should be corrected by persistent method. The habit of eating from hunger at certain hours depends upon lifelong practice, and, when once established, cannot be changed without violence to many functions, causing urgent and repeated demands upon the system for a resumption of it. Regular bowels come from an equally long-continued habit of going to the close-stool at particular hours of the day. Years of negligence destroy the habitual regularity with which the bowels move; hence we should not be discouraged if the habit be not re-established without long perseverance. A new habit cannot be formed, nor an old one altered, without long and persevering effort in the right direction. We should, therefore, encourage a patient that is in earnest in her search after health, to persevere for months, years, and indeed her whole life if necessary, in going to her water-closet without fail, once every day, at a certain hour, as regularly as the clock points to it. This is indispensable to a correction of the bad habit of constipation. A very effective part of this regular endeavor is to cause the mind to dwell upon the necessity for an evacuation, and the process itself, for at least half an hour before retiring to the proper place. It is not a difficult matter, with many persons, to create a desire in this way. Let no consideration of convenience enter into this punctual effort at stool. Arrived at the proper place, the position should be an easy one; no inconvenient strain upon any muscle should be allowed, and the patient should be possessed with an entire sense of leisure to perform the act completely. The value of all these considerations, where faithfully followed, is incalculable, and very few cases can long resist them. Without them, medicine will only temporarily relieve, instead of permanently curing, obstinate cases. I should caution against severe effort, or straining, as it is called; let time, patience, and gentle effort be the plan. Another matter of great importance, when an effort is made to have an evacuation, is to have the abdomen distended by ingesta. The patient should be instructed to eat plentifully of, vegetable diet, such as by its bulk is calculated to produce fulness. If the patient go to the water-closet with a sense of fulness in the abdomen, success will be much more likely. Should the regular time for making an effort be soon after breakfast, which is undoubtedly the best time, and the meal has not been sufficient to produce a sense of moderate distension, a full glass of water will complete that condition. For the purpose of giving fulness and a sense of distension, various kinds of ripe fruit may be resorted to with advantage. In prescribing fruit for constipation, we should bear in mind that there are three indications fulfilled by it, some kinds fulfilling all, while others fulfil only a part of them. They are, first and best, distension; secondly, increase of secretion, on account of the acids; and, thirdly, increasing peristaltic action of the bowels by indigestible fibres, seeds, or rind. Ripe and mellow apples, without being divested of the rind, may be eaten in sufficient quantities to produce a sense of fulness, and this should always be at the conclusion of a meal,—breakfast, for instance; the acids will increase the intestinal secretion, and the rind quicken the peristaltic motion of the bowels by acting directly upon the mucous membrane, and through it on the muscular structure. Very acid fruits, as the lemon and orange, only produce their effect on account of the acids they contain. They are excellent as a part of the ingesta of patients whose stools are dry and hard and lumpy. Fruits containing an abundance of seeds, as figs, or of rind, as tamarind, etc., increase the peristaltic action without causing much secretion. By inquiring into the character of the stools, we shall have a good guide as to the kind or mixture of fruits to be selected. There are kinds of diet, breads particularly, that act like these last fruits, and may be used in conjunction with or independent of them. Breads in which the bran, or hull of the grain, is contained in considerable quantities are of this character. The Graham bread, as it is usually called, ordinary coarse, brown, corn bread, or wheat bread, are those mostly resorted to. When this kind of bread is used for constipation, it should be eaten at breakfast, dinner, and supper, in such quantities as the experience of the patient finds necessary. I have advised patients who could not use the coarse breads to make what may be called bran crackers. A tablespoonful of flour, one pint of wheat bran, two tablespoonfuls of white sugar, and water enough to make them all into a pasty mixture, are the ingredients. This mixture is made into cakes, small or large, as may be wished, and baked in an oven until hard. When soaked in tea, coffee, or milk, they are not unpleasant. I have known patients benefited by swallowing certain seeds, with the rind, whole. A tablespoonful of wheat grains, oats, barley, white mustard seed, etc., can all be used for this purpose, and are not more disagreeable than medicines. Another kind of diet, which may be used to produce the kind of effect here aimed at, consists of the various small vegetables, as celery, radishes, pepper-grass, lettuce, asparagus, cabbage, etc. These may all be taken in quantities to cause distension.

In speaking of fruits, I ought to mention the berries as an excellent means, cheap, and easily procured, to accomplish all the objects attained by other fruits.

Everything should be done by habitual effort, exercise, diet, drink, etc., before resorting to the use of medicines; because, as is well known to the patients generally, as well as to the practitioner, the more medicines taken the more will be necessary. They lose their influence, and the dose must be increased in order to produce a full effect. This is almost always the case. Notwithstanding this evil, we are often reduced to the necessity of using laxatives to overcome constipation. To a just and intelligent application of medicines in the treatment of constipation, it is indispensably necessary to make ourselves acquainted with the condition of the alimentary canal, with reference to its secretions and muscular powers. It will be found that there are sometimes great deficiency of secretion, and torpor or want of vitality of the muscular structure, or weakness of this tissue. The want of secretion may be in the upper portion, in which case the bilious color is wanting in the stools, or the small intestines may give out less watery material, and then the stools are less fluid, or even dry. The secretions may also be deficient in the lower portion, or colon; in which case the fæces will be scybalous, dry, and lumpy. The muscular torpor, from want of irritability, is more frequent in the colon or rectum than in the small intestines. When in the colon, there is increase in size of the lower abdomen, sense of fulness and hardness, and the fæces are expelled with great difficulty. If there is sufficient activity of the colon, but the rectum is torpid, large accumulations occur there, the pelvic distress is increased, and nervousness, general and local, is exceedingly annoying. Sometimes all these conditions are combined to render the case one of the most troublesome and difficult to manage. Mechanical obstruction by stricture of the rectum, formed by pressure of the uterus, may give rise to chronic constipation, which may become permanent and almost incurable; or the uterus, by lying on the bowel, and pressing it against the sacrum, often gives rise to costiveness, that can be removed only by correcting the position of that organ. It is not sufficient to know that the patient does not have regular operations from the bowels, but we must know why she is thus constipated. Whether on account of want of secretion, and, if so, of what secretion; whether it is attributable to general debility, combined with muscular weakness of the intestines, or to lack of irritability of the intestinal tube and consequent torpor; and if so, whether this lack of irritability exists in the whole length of the canal, in the colon, or the rectum. We must also know whether there is obstruction from stricture in the rectum, piles, thickening in the mucous membrane, rigidity of the sphincter, or from the uterus bearing heavily upon it. To give a laxative merely because it ordinarily produces a fecal discharge, is always unphilosophical, and sometimes exceedingly injurious in its effects. I think it is inattention to the exact state of the alimentary canal that makes constipation so often incurable. For constipation, attended with very dry, hard stools, showing a deficiency in all the secretions from the bowels, in addition to the course of diet, including acid fruits, etc., our object should be to administer such drugs as will most effectually stimulate to secretion. The various saline medicines are indicated. Sulphate of magnesia is a most excellent one; and a good way of administering it is in combination with sulphuric acid. From one to two drachms, or even half an ounce, given in combination with acid enough to taste somewhat sharply, will promote secretion along the whole of the small intestines, cause a large effusion of water, which will dissolve the fæces and render their evacuation easy and sure. In the morning, some time before eating, is the best time to take it. When there is reason to believe that the portal circulation is slow, and the liver furnishing less than its usual amount of secretion, some form of mercurial should be used with the salts. If the case is chronic and the constipation obstinate, we may give from six to ten grains of blue mass in pills, at bedtime, every fourth or fifth night, and follow it with Epsom salts in the morning. A continuance of this alterative cathartic from four to six weeks, seldom fails to cause a change in the alimentary secretions. Sometimes it is better to give these cathartics nearer, and sometimes farther apart. We must judge of this more by the susceptibility to the constitutional influence of mercury than anything else. It is almost always the case that this very scanty state of the secretions is accompanied with an impoverished state of the blood; hence iron in some shape will be beneficial in most cases. If there is much debility, a long course of tonics will be indispensable. It may often happen that this scanty condition of the secretions is attended with debility of the muscular fibre of the intestinal canal. When this is the case, we must add to the above treatment that which is applicable to this kind of intestinal torpor, which I shall now consider. Before doing so, however, I will remark that several other salts will answer as well, and sometimes even better, than sulphate of magnesia. The kinds of tonics which are most effectual in debility of the muscular structure of the intestinal canal are such as give general strength, and it is most desirable to combine them with special tonics. The latter are rhubarb and nux vomica. These have always seemed to me to have a special tonic influence upon the intestinal tube, and, when properly given, to increase the susceptibility to their own action. The rhubarb, although an alimentary tonic, induces less susceptibility to its own influence than the nux vomica. The best way to give the rhubarb is either in the root, without pulverization, or in the extract. When given alone in the root, the patient can take a little, twice a day, by chewing, and, after mixing with the saliva, swallowing it. A little experience will enable the patient to judge of the right quantity, which she can repeat as often as it is required. When the rhubarb is taken this way, she may also take a solution of ferri. sulph. and strychnia, in water, one grain of the former to one-sixteenth of a grain of the latter.

I have often succeeded in overcoming this constipation or debility by giving one grain of quin. sulph. with five grains of powdered nux vomica after each meal. Or the same amount of nux vomica, with iron by hydrogen, two grains each time, after eating. It is usual to use aloes in the constipation of uterine diseases; but I have found very few cases with which this drug did not disagree. But there is a torpor of the intestines where general tonics cannot be borne; where, in fact, there does not seem to be any general debility, there is only a want of susceptibility to the stimuli which ordinarily arouse them to action. The secretions color the fæces properly, and give them sufficient moisture; there seems to be no fault in their appearance, consistence, odor, or other character whatever. They are deficient only. The patient may be plethoric and florid, her general muscular strength sufficient, and her blood, so far as we can judge, good in composition. Special tonics and stimuli are indicated in such instances, and they alone should be used. Such measures should be adopted as will arouse the muscular action of the intestines. Nux vomica, in five-grain doses, with the rhubarb extract or without it, or the strychnia in solution, in doses from a sixteenth to a twentieth of a grain, constitute our most valuable medicinal appliances. This is the kind of constipation that is most benefited by and is most amenable to a persevering regiminal and dietetic course of management, such as I have endeavored to give.

In addition to the rhubarb and nux vomica treatment, we may get some good from external appliances, and manipulations of the walls of the abdomen. The most valuable, when gently, perseveringly, and methodically applied, is what is understood by the term kneading. The colon is the torpid portion in most cases of this sort of constipation. The process of kneading consists in handling it so as to stimulate its fibres directly. One plan is to grasp it with the hand, and squeeze it from one end to the other. We should begin at the right groin, and with a knowledge of the position and direction of it, grasp it with both hands at this point, then a little higher up on the same side, and then a little higher, until we reach the right hypochondriac region. We should then follow it across the abdomen to the left hypochondriac region, and thence down to the left iliac. Or, we may double our hands as bakers do when kneading their dough, and standing over the patient, press with the knuckles of both hands, first in the right iliac region, and imitating the process of kneading, pass slowly from this to the right hypochondriac, thence across the abdomen and down, as before directed. If we trust this process to a non-professional attendant, we should be sure to show him how to do it, as it is important that it should be done right. When this process of kneading or squeezing the colon is first instituted, it should be practiced with the utmost gentleness, but the force and rapidity of motion may be increased until great freedom may be used. It should be resorted to a short time before retiring to the water-closet, say half an hour. Some patients find an efficient laxative in what they sometimes call a water-compress, applied to the abdomen over night. It is made by doubling a napkin several times, so as to make a thick compress, large enough to cover the entire abdomen anteriorly. This is saturated with water, and, after being placed upon the abdomen, covered with a roller or bandage so as to keep it in place. It is thus allowed to remain from the time of going to bed until the time to rise in the morning. I think this water-compress is best adapted to cases in which there is a deficiency of secretion in the intestinal tube.

A bandage, or, what is better, a roller applied tightly enough to press the wall strongly upon the contents of the abdomen, frequently stimulates them to proper action, both as it respects secretion and peristalic motion. When it is determined to use the roller or bandage for its stimulating influence, it ought to be applied upon rising in the morning, or, what is perhaps better, immediately after breakfast. This bandage should not be worn constantly, nor even many hours in the day. From the time of rising until two hours after breakfast, or from breakfast for three hours thereafter, will be long enough. The constant use of the bandage would but increase the evil—lax abdominal muscles—for which it is advised. Before leaving this part of the subject, I desire to say, with reference to the free use of nux vomica to overcome intestinal torpor, that in all cases we should remember its effects are cumulative, and quite a difference of susceptibility to its influence is manifested by different persons, in consequence of which the patient should be watched, and the dose graduated to the least quantity necessary in the case. Although I have given nux vomica and strychnia for a considerable length of time to a great variety of persons, and for several weeks together, I have never seen anything more than slight inconvenience from it in the shape of nervous startings. Very rarely we meet persons who cannot take it at all; it disagrees with them as soon as they commence its use.

There is another species of intestinal torpor of a very obstinate character and very distressing to the patient; I mean a lax, torpid rectum; so torpid as to allow the fæces to accumulate in large quantities, and cause great inconvenience from pressure. To such an extent does this collection sometimes go as to press the posterior walls of the vagina forward and protrude it between the labia. The first indication in such cases is to dissolve the fecal mass and discharge it. Various kinds of injections are useful for this purpose, warm oil, warm water, etc.; but one which I have seen do much good is composed of one ounce of fresh ox-gall and four ounces of warm water. This composition dissolves the fæces very readily, and the fresh bile stimulates the intestine to their expulsion. The evacuation, of course, will give only temporary relief, and there remains the most important indication, that of giving tone to the bowels, with a view of preventing the accumulation in future. This is difficult, and in some instances of long standing quite impossible. Much good can be done in nearly all cases, however, and we do not discharge our duty if we do not try to relieve when we cannot cure every case. Cold water thrown into the rectum once or twice a day, in small quantities—eight ounces—is always good, without some special reason to the contrary. There are generally two indications to be fulfilled in these cases,—relaxation of the sphincters and restoring the tonicity of the proper rectal fibres.

It is a singular fact, which I think I have observed, that the sphincter muscles increase in strength with the advance of age; this is one of the causes why the fæces are voided with more difficulty in old persons. To give tone to the rectal muscles, astringent injections have been recommended and extensively used; but in my practice they have been almost uniformly useless, many times injurious, and always disagreeable. They dry up the secretions, an evil not to be compensated for by any other effect; they do not, so far as I can judge, cause contraction of the muscular fibres, but they are very apt, if persisted in for a length of time, to cause inflammation. I have derived more benefit from tonic suppositories and injections than from any other kind of medicinal treatment. A suppository of twenty grains of extract of gentian, or five grains quin. sulph., ten grains of extract of cornus Florida, or a mucilaginous suspension of any of these introduced into the rectum every night at bedtime, and retained, if possible, until morning, are good tonics and eligible modes of using them. It will be necessary, to secure the retention and efficient contact of these tonics, to first empty the bowels with ox-gall and warm water, and afterward introduce them with as little irritation as possible. The quantity of mucilaginous material should not exceed two ounces. The tonic treatment of this kind must be varied, taking first one tonic and then another, in first one form and then a different one, and must be kept up for a long time to do much good. We cannot be too careful, in all our treatment, to avoid anything to which the rectum shows any sensitiveness. When it becomes tender and sensitive, we should at once desist until all of this has subsided before we are justified in beginning again. It too frequently happens that both the physician and patient become discouraged, and desist before the remedies have had a fair trial. Is there anything that will relax the sphincter ani? I am not aware that any means operate with efficiency in this direction; but I have used, in a few instances, with apparent benefit, the ointment of belladonna, made by mixing the extract with lard. I apply it to the anus externally upon going to bed at night, and continue it, until the question against or in favor of its usefulness is fully determined.

This application certainly removes the irritability of the sphincter, which causes it sometimes to resist the extrusion of the fæces.

As I have before remarked, there are cases in which this relaxation cannot be cured; we are then compelled to resort to palliatives, and we must be careful to palliate intelligently. We are to give the weak rectum artificial support, to enable it to retain as near as may be its ordinary size. This can be done only through the vagina. An air or sponge pessary introduced into the vagina, so as to press the rectum against the sacrum, and thus diminish its capacity, will prevent the great accumulations from taking place, and in that way prevent one source of great inconvenience. Dr. Hodge recommends the globe pessary for this condition of the rectum, which answers very well in many cases, perhaps in the majority; but each case must be studied with reference to its own peculiarities, and the shape, size, and consistency of the pessary adapted to it.

When our object is palliation alone, there is no objection to wearing the pessary all the time, but if it is used to palliate what we believe to be a curable case, we ought to use it intermittingly, and the patient should not wear it at night especially. It would probably be better in a majority of the cases to introduce it before rising in the morning, and allow it to remain until noon. One thing I think essential in the size and position of the pessary, and that is, that it does not compress the rectum below its natural capacity; there should be room enough for an ordinary amount of fæces in it, lest it become a source of obstruction, which it will do when larger or improperly placed.

As will be noticed, I have omitted to say anything of enemata in constipation, from inactivity of the colon or upper portion of the alimentary canal. As an occasional means injections operate well; but, like other laxatives, when used for a length of time they lose their influence entirely. If we determine to use injections as an habitual laxative, by proper changes in kind and quantity, we may prolong their efficacy very much. To a person unused to them half a pint of cold water will act very well. When the bowels fail to respond to this quantity there ought to be an increase of two or three ounces, and then that amount used until its effects are not satisfactory, when a few ounces more should be added, and so on we may increase the amount until the quantity becomes intolerable. When this is the case we may order half a pint of water with a drachm or two of common salt, chlorate potassa, or nitrate of soda or potassa. We should increase the quantity of water or strength of solution, or both, as the susceptibility of the rectum is decreased, until we cannot carry either farther. After we have thus obtained as much good from injections as we can it is sometimes expedient to use suppositories as laxatives. Suppositories are made of laxative medicines, or of any other material. Compound extract of colocynth, or some other purgative extract may be used; or we may inclose in some of the extracts a dose of podophyllum, or any of the purgative resinoids or alkaloids. These should be retained until absorption takes place. The common suppositories of soap, tallow, wax, sperm, stearin, etc., are of the second kind. It not unfrequently happens that the above modes of using injections and suppositories may be alternated very profitably, the full effects of each being experienced upon their resumption after having used the other for a time. But some persons cannot use injections; the rectum is too sensitive, and attempts to do so induce so much irritation that they must abandon them. In such cases suppositories are out of the question.

This form of rectocele sometimes requires a resort to surgery. The operation is detailed elsewhere.

I have elsewhere shown that the uterus, by its wrong position, sometimes presses upon the rectum and obstructs the passage of the fæces. This may be effected by retroversion or prolapse. The indication, of course, is to restore the uterus to its proper place, and as I shall have occasion to speak elsewhere of these difficulties (malpositions), I do not think it necessary to more than mention them here.

CHAPTER XVIII.

SPECIAL TREATMENT.

Baths.

THE local treatment of inflammation of the cervix uteri is made up of several therapeutic items, varying according to the intensity, quality, and seat of disease. Of these there are, however, a few that are applicable to almost all cases; hence their description, modes of use, etc., may be considered before going farther. Baths, injections, and some minor remedies are of this kind. Water, when applied to the surface, is purely sedative in its effects if it is of the temperature of the part on which it is used. If the bath is partial, the sedative influence is for the most part confined or limited to the part to which the application is made. So with injections per rectum or vaginam. They soothe the parts contained in the pelvis. If the water is warmer than the part of the surface bathed, the effect is stimulant; if it is colder, by virtue of the physiological action brought into play, it is first sedative and then stimulant. The circulation and nervous influence of the vagina, for instance, when the cold water is first thrown into it, are depressed, but very soon after its evacuation, or withdrawal, the vessels become excited to increased circulation of blood, and increased heat takes place and the nerves become more sensitive. In all these respects baths and injections act alike. The injections are internal baths, by which the uterus is bathed through the vagina. But the effects of baths and injections may be modified by containing medicinal substances. They may be rendered more stimulant or more sedative, or be even made to possess other qualities by impregnation with medicines; one in very common use is astringent in character. Another mode of using water and applying it, either simple or impregnated with medicine, is, to wet a cloth or a sponge with it and bind it to the surface, or introduce it into the vagina. Several thicknesses of cotton cloth applied to the abdomen and impregnated with water is what is called the water compress; and often when allowed to remain in contact with the skin for several hours it produces considerable excitement, and, if persisted in for days, will cause first a vesicular, next a pustular, and finally a phlegmonous eruption. The way to render it effective is, after applying the wet cloth to cover it over with oil-silk, and then confine the whole with a bandage or roller, with a view to prevent evaporation. Sponge introduced into the vagina, impregnated with water holding medicine in solution, is a common way of affecting the uterus. I do not design giving an extended view of the effects of baths or their application and modus operandi, but so much aid is occasionally obtained by the use of them, that I cannot refrain from speaking of the application of some forms of them to diseases of the uterus. The bath most applicable in inflammation of the cervix uteri and most commonly used is the sitz or hip-bath, which is intended to allay the inflammatory irritation and pain. It is often the case that there is a great deal of suffering from pain without much inflammatory action in the parts; in these cases a sitz-bath will often give great relief. In many instances the efficacy of the bath may be enhanced by having the patient introduce a speculum while in the water, so that it may pass up the vagina to the neck of the uterus and thus directly affect the part diseased. In cases of medicated sitz-baths the organ may thus receive the full benefit of the saline, anodyne, or other medicinal impregnation. The common glass tube will do very well for this use, where we wish only to bathe the neck of the uterus; but if we wish the fluid to come in contact with the vaginal walls and remain there for a considerable time, the wire speculum is the best. While speaking of the use of the speculum in this way, I may mention that a very efficacious mode of applying medicated washes without the bath to the cervix uteri or vaginal walls, is to have the patient lie upon her back, introduce the speculum, and then pour the fluid into it. By remaining in that position she can retain the contact of the medicated solution as long as desirable. Ice-water, ice, astringent powders, or almost any form of substance may be applied and retained in contact with the os and cervix uteri with great advantage in this way. This mode of using remedies is particularly useful in bleeding fungus or vascular tumor of any kind.

Hip-bath.

The sitz-bath, when a patient is suffering with the pain and heat of uterine disease, may be used as often as necessary, twice a day at least; but three, four, or even a greater number of times will not be too often, when they are found to be soothing and useful. We may extemporize a hip or sitz-bath, by putting water in a common washing-tub; but the cheap tin vessels made for the purpose are within the command of almost all persons. There should be so much water that when the patient sits down in it, the whole pelvis will be covered.

Temperature of the Bath.

What should be the temperature of the bath? The patient's sense of comfort, or discomfort, from its use, should be our guide in this respect. We should seek a temperature that is comfortable and soothing to the patient while in the water, and that leaves no sense of discomfort. The baths are intended for, and should add to, the comfort of the patient; when they do not do this, they should at once be discontinued. As a general rule I advise my patient to take tepid water for her first baths, and then gradually use them cooler until they are cold, unless they become disagreeable in some respect; if they do so, to continue them tepid. The colder a bath is, the more good it does, provided it be comfortable. The time for taking it may be regulated by the convenience of the patient, and the necessity for it, with the view of allaying pain, heat, etc.; probably in the majority of instances, the most advisable times for taking it are upon rising and retiring. The length of time the patient remains in the bath should also be regulated somewhat by its effects. If the patient remains too long in the water it will debilitate her, particularly if there is considerable water and the bath is frequently repeated; on the other hand, if she does not remain long enough, she will not derive any benefit from it. She may try remaining in it fifteen minutes, if she does not find herself very much relieved before that time, and she ought to be governed in her use of subsequent baths in this particular by the effects of the first few trials. While in the bath the intended temperature of the water may be kept up by adding hot water from time to time. The hip-bath is used almost wholly with reference to the local disease, but when general baths are required, it is usually for the relief of some attendant general symptom.

Shower-bath.

The shower-bath may be used as a roborant excitor of the circulation, if, upon trial, it can be borne, and produce a good effect. Some patients think they are very much benefited by the shower-bath, and say they cannot do without it.

Sponge Bath.

The sponge bath is useful in causing a tonic and soothing reaction upon the surface. Neither of these can be tolerated by very feeble patients. The cold or tepid sponge bath, administered at bedtime, not unfrequently soothes nervous irritability, and enables restless persons to sleep soundly. I have not used baths in any other form than these, but when used as I have here indicated, I have seen such pleasant results from them that I cannot refrain from recommending them.

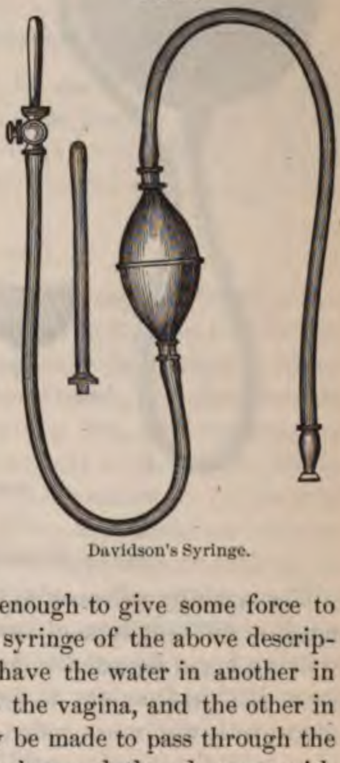
Injections.

Injections are applicable to almost all cases of inflammation of the cervix uteri, do a great deal of good, and are believed to be sufficient to cure some cases. As I have before said, they may be used as internal baths, to get the influence of water and temperature on the vagina and uterus, for the application of medicinal substances to the mucous surface of this cavity and viscus, and also as detergents, to wash the vagina of all substances that should be removed from it for purposes of cleanliness. In some one of these forms injections may be used in nearly every sort of cervical inflammation. The simple injection of water may, and ought to be, used by all females who have inflammation of the uterine neck. The medicated injections can be useful only in cases where the inflammation is within reach of them, as when inflammation affects the mucous membrane of the vagina, or the membrane covering the external surface of the vaginal portion of the cervix. For obvious reasons, injections containing medicines can hardly do any good, by virtue of the solution, when the inflammation is situated inside the cervical cavity. Vaginal injections cannot reach the seat of disease. I have not used intrauterine injections, as I think there are less hazardous modes of conveying medicines into the cavity of that organ. I should not discharge what I consider a duty, in this respect, if I did not condemn the use of the intrauterine injection. This method of reaching disease in the body of the uterus has lately been so strongly recommended by a number of eminent men in the profession, that it will undoubtedly be more extensively resorted to than it ever has been before. I think this is unfortunate, and believe that sufficient facts have already been accumulated, showing the suffering and danger resulting from it, to condemn it, without subjecting this class of patients to the ordeal of a new trial. I believe a great amount of harm has been done, and that much more will be perpetrated by it. My own observation was conducted under a conviction of the correctness of its philosophy, and with an earnest desire to avail myself of every good means of curing my patients. The result of such trials as I have made is, that they have none of them been useful when used for any other purpose than checking hæmorrhage in cases of abortion or uterine fungus. I think, also, that they are unnecessary, as safer and more efficacious methods have been devised for treatment of the mucous membrane of the corpus uteri.

Manner of Using Injections—Kind of Syringe.

The efficacy of injections depends very much upon the manner in which they are administered and the kind of instrument used. The essential quality of a syringe is its capability of receiving at one end and discharging at the other perpetually, so that any quantity of water may be used without withdrawing and reintroducing the pipe. A large number of forms of syringe have been invented; but, for convenience, that form is, I think, preferable which has a vulcanized rubber, hollow ball mounted in the middle of a long flexible tube; by pressing on this ball, and relaxing it, the water is drawn in at one end and forced out at the other. A pewter, britannia, or ivory tube delivers the water into the vagina, and by its length may be made to convey it to the uppermost part of that cavity, and thus completely wash its walls. A siphon may be made to answer the same purpose, by having the fountain high enough to give some force to the current. Should the patient use a syringe of the above description, she may sit over one vessel, and have the water in another in front of her. By inserting one end in the vagina, and the other in the vessel of water, the whole of it may be made to pass through the vagina and fall into the vessel beneath her, and thus do away with the inconvenience of undressing.

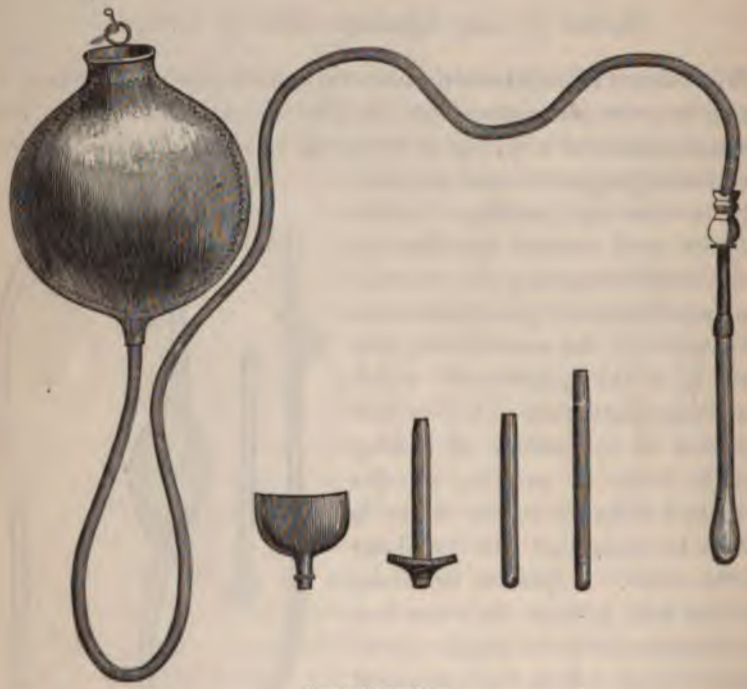
FIG. 89.



Davidson's Syringe.

An instrument is now made and on sale by Messrs. Burbank & Co., Boston, that in many instances is an admirable substitute for syringing; they call it the fountain syringe. It is an india-rubber sac with a long tube depending from it. The sac is filled with water and hung up several feet higher than the patient; the tube is then inserted in the vagina, and, by means of the thumb and finger, the flow is regulated to suit the circumstances. I give a wood-cut of one that will convey a correct idea of them.

FIG. 90.



Fountain Syringe.

Quantity of Injection.

The quantity necessary to be used in an injection will vary very much in different sorts of cases. If water alone is to be used, and we wish to get the sedative influence, the quantity must generally be large, that is, from one to eight quarts; if we wish to stimulate the uterus with very warm water, a large quantity will also be necessary; if we wish the injections cold, it is better not to use so much.

Medicated Injections.

The medicated injections, also, should be large or small, according to the effect we wish to produce and the strength of the solution. A pint, or at most a quart, will be sufficient for astringent injections.

We often use anodyne injections on account of their soothing influence upon the sensitive parts. As a general rule, anodyne injections need not to be very large, say a pint, or less, but the patient can continue passing it through the vagina until its effect is attained. This may be done by using only one vessel, pumping from and allowing it to fall into the same. Frequency must be determined, also, by the object of the injection. Simple water injections can be used more frequently than medicated ones, and anodyne more frequently than astringent. The simple injections, if they afford relief, may be used from three to six times a day, or oftener; narcotics three or four times, or oftener, owing to the urgency of the symptoms requiring them and the good they are found to do.

Astringent Injections.

Astringent injections ought not to be made use of, as a general thing, oftener than twice a day, and in some cases to which they are applicable, this is entirely too often. Of all the vaginal injections used, the astringents are most commonly resorted to, and are productive of most good.

Modus Operandi.

When an astringent is thrown into the vagina, the first effect is to coagulate the mucus, pus, or blood, contained in it; after this, its contact with the mucous membrane becomes more intimate, and its influence is exerted upon the capillary bloodvessels, and the glandulæ or crypts. The vessels are constricted in size, and circulate less blood, and the calibre and functional activity of the crypts are diminished, and slight congestions and inflammations are for the most part cured, or at any rate benefited. When the vessels are circulating too much blood, and the muciparous apparatus furnishing too much secretion, this astringency is desirable. We ought not, with certain exceptions, to use astringent injections when there is no hypersecretion from the mucous membrane of the vagina or cervix uteri, nor an ulcerated or inflamed surface with which the solution can come in contact.

Frequency of Using.

The frequency with which they may be used must be indicated by observing these two effects, and the dryness more particularly. I think we may lay down a rule for repeating them, like this: never repeat an astringent injection while the vagina is dry from the effects of a preceding one. We should, after obtaining the full astringency of an injection, in the stoppage of a leucorrhœal discharge, wait until the mucus again renders the mucous membrane moist. It will be found, very often, that this requires twenty-four and even thirty-six hours to take place. A disregard of this direction will sometimes induce an increase of inflammation, and give our patient great inconvenience. In fact, too long a continuance of astringent injections is apt to cause vaginal inflammation.

Alternate Astringent Remedies.

I think, however much an astringent may be indicated, that the same article ought not to be used more than twelve or fourteen consecutive days, and should then be alternated with another one of the same class, or simpler ones. This last I generally prefer. A permanent dryness of the vagina after any one astringent, should preclude the use of that article at least, and cause us to try another, and so on until we get one that will agree with the case; or else we must abandon all astringents, and fall back upon simple water. To get the full benefit of a medicated injection it should be preceded by one of simple water, in order to wash out the superabundant secretion in the vagina.

Temperature of Injections.

I know of no better rule to govern the temperature of injections than the comfort of the patient. After a trial of hot, tepid, warm, cool, and cold, let the patient suit herself by the effect they have upon her. Any temperature that is disagreeable should be avoided. The extract of opium makes a good anodyne injection. Five grains to a pint of tepid water, used for ten minutes, a quarter or half an hour, will often allay pain, arising from inflammation within the vagina, very readily; or one grain of extract of belladonna may be used in the same way. In fact, we may choose among the narcotic extracts, remembering that the solution must be impregnated with at least three doses of the medicine. Among the astringents, alum is the most common, the most useful and efficient. It possesses the advantage of having no poisonous ingredient in it. As Dr. Bennett has taught us, it sometimes produces severe inflammation; but this is, doubtless, owing to the inconsiderate use of it, and arises from its very efficacy in suppressing the vaginal secretion. One drachm to a quart of water, tepid, cold, or warm, as the patient may desire, is perhaps the strength of solution that will most commonly agree well; but in this the patient should be governed by the sensation it leaves behind. There should, at first, be a sense of dryness, quite obvious to the patient, which should pass entirely off in less than six hours; much better if it is entirely gone in two hours after the injection is administered. If this sense of dryness is perceptible, we should not allow the patient to use an injection for several hours after it is gone; and the longer it continues, the longer should be the interval. If it last six hours, the interval should be twenty-four; if two hours, the interval should be twelve; if it last twelve hours, it should be discontinued, as it will most likely do harm. Another good astringent is sugar of lead; this is, perhaps, next in efficiency to the alum. Double the quantity may be dissolved in the same amount of water. I do not like sulphate of zinc, although highly recommended. Thirty grains of it may be dissolved in a pint of water, as an astringent injection. The sugar of lead, or zinc, ought not to be continued as long as the alum. Some of the vegetable astringents are often used to good advantage; strong decoctions of oak bark, rhatany, kino, or a solution of pure tannic acid. This last is an admirable astringent, not less efficient than the metallic, but also less injurious. It can be used of the same strength as alum, or even double that strength, if desired. Injections and baths ought to be suspended during the time for menstruating; if tepid and simple, they probably do no harm at this time; but if cold or astringent, they are pretty sure to interrupt, more or less completely, this flow. Almost every practitioner that has had much experience in the treatment of uterine diseases has a favorite injection. I am disposed to adhere to the simpler forms, seeking rather for correct principles by which to be governed in administering them, than for great variety of substances.

Position of the Patient.

The most favorable is the dorsal, recumbent, or knee-chest posture. In both these positions the vagina is thoroughly dilated so that the mucous membrane is well bathed by the water. The knee-chest is the preferable position when we desire to use concentrated solutions and have them retained in contact with the vaginal mucous membrane long enough to make a profound impression.

Accident in Injection.

There is one annoying, and sometimes to the patient alarming, little accident that occasionally occurs during the reception of an injection in the vagina. Suddenly, while injecting the fluid, she is seized with severe cramping pain in the hypogastric region, which radiates to the back and hips, down the thighs, and sometimes over the whole abdomen. She becomes sick at her stomach, is attacked with rigors, and her feet and hands often become cold. This pain continues, with exacerbations and remissions, for several minutes or hours, and when it subsides, leaves a sense of soreness, more or less considerable, corresponding with the severity of the attack. As the chilliness and rigors of the first few moments subside, there is reaction; the patient becomes warm, and sometimes decidedly feverish. In all cases in which I have witnessed these symptoms the patients were using a syringe, in the end of which, within the vagina, were several perforations, some on the side of the bulb at the end, and one at the very extremity. I think that one of the perforations had been accidentally placed in apposition with the external os uteri, and as the water was forced through this perforation, it entered the cavity of the cervix, and passed through into the cavity of the body of the uterus, inducing the first shock, and the pains following it were caused by the spasmodic attempts on the part of the uterus to expel it. Although I have, in a large number of instances, been called upon to witness and prescribe for these symptoms, I have not seen them proceed to dangerous extremities. I think these are cases of injection into the womb; and, in this respect, they constitute my whole observation. An opiate injection per rectum, fomentations over the pubis, and quiet, are all the remedies I have found necessary. And often the symptoms subside so soon that I have not been under the necessity of prescribing at all.

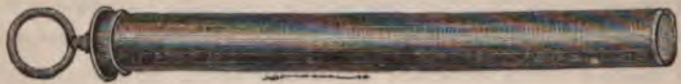
We occasionally meet with patients who cannot use baths or injections. In these cases it will be found, almost invariably, that this inability arises from their producing an exaggerated effect. If it is simple tepid water used for the bath or injection, its results are too sedative. The bath debilitates the patient, instead of simply soothing her. I have seen a single tepid bath prostrate a patient so that she would have to lie in bed for several hours before its effects wore off. A cold bath induces chilliness and permanent coldness, and reaction is not established; the system recovers from its effects only after a number of hours, and that slowly. Hip, sitz, or general baths may produce these effects, and when they do so, should be abandoned as injurious. Other nervous symptoms, as difficulty of breathing, nausea, dysuria, etc., also occasionally seem to be the effects of baths. It is singular that some patients are so susceptible to the depressing effects of water that injections debilitate them very rapidly, and they are obliged to abandon them on this account. Cold water, as an injection, not unfrequently causes general coldness. But it is the medicated injections that most frequently produce an exaggerated effect. Alum injections, even when the solution is weak, with some patients, produce such disagreeable and constant dryness, and sense of heat, as to make them quite intolerable. And the sensitiveness of the vagina becomes so great that some patients are forced to cease the injections of alum wholly. The same objections apply to other astringents to a less degree, and the consequence is, that however baths and injections may seem to be indicated, in the cases where idiosyncrasy renders them so objectionable, we must forego their use entirely.

Should they be used in Pregnancy?

Is pregnancy an objection to the use of local baths and injections? I think not with proper care. A hot bath about the hips would be objectionable; a very cold bath that might cause much of a shock, or internal congestions, would not be advisable; but plenty of tepid water, and even cool water, temperately used as baths, give the pregnant woman great comfort, and cannot generally be followed by any bad effect. Injections may be used with less caution than baths. The caution which we would administer to all is, that they should not be copious. In pregnancy the patient ought not to use more than a quart at one time. The injections should always be tepid or cool; not very cold nor very warm, lest they stimulate the muscular, vascular, or nervous system of the uterus too much, and induce hæmorrhage, or provoke contractions. Both of these effects, I think, I have known produced by such injections; the cold causing contraction and expulsion; and the very warm hæmorrhage and death of the ovum. Strong astringents should also be avoided. Much comfort may be derived from anodyne injections, when there is neuralgic suffering about the uterus or vagina, during pregnancy. Cases of superficial inflammation, and even early ulceration of the vaginal portion of the cervix, may always be benefited by injections, baths, and the general treatment which I have heretofore detailed. In fact, most cases, if not all, where there is no idiosyncratic objection to the baths and injections, will be very much benefited by them. When, however, the disease has been of long standing, or extends between the labia of the os uteri, or into the cavity of the cervix, these will only slightly benefit it. We must then seek for something that will more profoundly influence the nutritional changes, and the vascular and nervous tissues of the parts.

The introduction of anodyne, astringent, and alterative ointments, pessaries, and powders, may be resorted to with much profit in many instances. The small instrument called the suppository syringe will enable the patient to place ointment in contact with the uterus very conveniently. Ointments made with opium, belladonna, hyoscyamus, cicuta, tannic acid, mercury, iodine; in fact, almost any substance used to exert an influence locally, may be made into ointment and thus introduced. The powders of many of these articles may be deposited in the vagina in the same way. And the medicated pessaries made by mixing the medicine intended to be used with cacao-butter, may be passed up to the os uteri through a glass speculum, either by the patient, her attendants, or the physician. In using the narcotics in the vagina, in the form of ointment or pessary, we can safely use double the quantity given by the stomach. The ointment is absorbed slowly, and consequently it requires some time to effect much by it. But the powders act much more readily. Morphia thus introduced will sometimes act with great promptitude, and the powder of tannic acid is a very efficient astringent used in this way. The absorbing power of the vaginal mucous membrane is decidedly less than that of the rectum. It takes a longer time and more of the medicine to affect the system through this cavity. Possibly this may be to some extent on account of the more ready escape of substances from the vagina; but I think, also, the membrane does not take up substances so quickly. From this fact injections or suppositories per rectum will often do more good in allaying pain especially than when used per vaginam. A few drops of strong solution of sul. morphia in the rectum act very promptly. Dr. Greenhalgh and others use cotton pessaries medicated per vaginam. The cotton is prepared by immersing it in a strong solution of the medicinal agent to be employed, and afterward drying before using it. Still another method of making local applications to the upper part of the vagina is to envelop the medicines in a sac of thin cotton or linen goods, and pass it up to the cervix, and let it remain there until the astringent, or whatever may be contained in it, is dissolved out, and exerts its influence upon the parts. The patient can use this kind of application without assistance.

FIG. 91.



LOCAL TREATMENT.

There are very few cases of chronic inflammation and congestion of the uterus that may not be benefited by what is known as local treatment. This is especially true with reference to those cases in which the intensity of the disease is sufficient to cause the loss of the epithelium or deeper portions of the mucous membrane,—abrasion or ulceration. Local treatment is not only beneficial but indispensable to the cure of endometritis and endocervicitis.

Local treatment consists in the application of certain medicines directly to different parts of the uterus and vagina for the relief of the various conditions connected with the inflammation. The medicines and the methods of their application are intended: first, to relieve pain by their anodyne influence; second, to deplete the parts of the superabundance of blood; and, third, to change the character of the capillary circulation by restoring its natural activity.

When there is much pain of whatever character the anodyne applications are indicated; and many patients will bear anodynes as local applications for the relief of pain very much better than when taken internally. Even where there is no idiosyncrasy forbidding the use of anodynes, they may affect the stomach on account of their taste, so that they cannot be borne or will not be taken.

Suppositories made by impregnating cacao-butter with a quantity of the anodyne to be made, fifty per cent. larger than when taken in the stomach, and repeated as frequently as required, is one method of making anodyne applications. The suppositories are made by the apothecary in a shape and of a size for the vagina, and also for the rectum. It requires a longer time for the anodyne to be absorbed by the vaginal membrane than by the stomach or rectum.

When it is desired to use the suppositories in the rectum instead of the vagina it will require no more than the ordinary dose of the medicine, and the effect is obtained more promptly. It must be remembered also that the mucous membrane of the rectum is very much more sensitive than that of the vagina. When therefore we desire to use medicines, the primary effect of which is irritation, as chloral or bromides, it will be necessary to dilute them more than for the vagina. Topical applications of anodynes may be made in various other ways, by inclosing the medicines in a sac of thin cotton cloth, gauze, or domestic, and placing it in the upper part of the vagina, or entangling it in cotton-wool and putting it near the cervix.

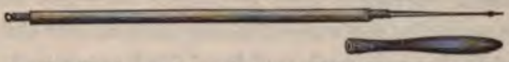
Sometimes the medicine may be applied in solution, the patient lying on her back so that the fluid may gravitate to the cervix. Half an ounce of fluid introduced through an ordinary glass or rubber syringe will generally be retained—if the patient continues the dorsal position—until it affects the nerves of the part. Applications of this kind can be made by the patient herself, or the nurse.

Topical depletion in inflammation and congestion of the uterus is also a most valuable curative measure. When the uterus is very tender and sensitive to the touch, it will require but little irritation to cause intense local inflammation. We must be especially careful under such circumstances to avoid the third class of topical applications.

The tenderness and sensitiveness depend upon an unusual intensity of inflammation in the fibrous structure of the uterus above, which, although chronic in duration, is subacute in grade. This kind of turgidity, sensitiveness, and pain is sometimes kept up by the presence of perimetric inflammation—cellulitis—local peritonitis, cystitis, etc., and they contraindicate any stimulating applications to the uterus. It is in the conditions just described that local depletion is applicable and beneficial. Common means of local depletion are leeches and scarification. Leeches may be applied directly to the uterus through the speculum, around the anus, over the sacrum, or pubic region. When we desire to apply them to the cervix, some preparation will be necessary to insure success. The vagina must be thoroughly washed by large injections of hot water to remove any offensive secretion or other contents of the vagina. The cervix may then be exposed by the speculum and sponged with sugar and milk, and it will add to the readiness with which the leeches take hold to prick the cervix until it bleeds, and then smear the surface with the blood. The leeches are first thrown into tepid water, and from it are taken out, placed in contact with the cervix, and watched until they fasten upon it. The number employed—from four to twelve—will be governed by the amount of turgescence and pain; when the intensity of inflammation is very considerable the greater number. In judging of the number necessary, we must be governed by the pain, tenderness, and general condition of the patient. The pain and tenderness must be such as are caused by local hyperæmia—inflammatory or congestive—or by inflammation in the surrounding tissue, and not the pain and sensitiveness of neurotic conditions of the parts or the patient. I do not mean neuralgic pain as that term is generally understood, but hyperæsthesia unattended by any hyperæmia.

Scarification cannot be made to take the place of leeches, but it is often followed by great improvement, and is very efficient in removing congestion of the submucous tissues. It may be performed by any long pointed knife by which the cervix can be reached, but perhaps the more efficient instrument is Buttle's artificial leech.

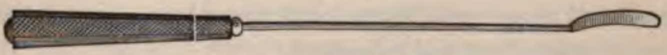
FIG. 92.



Dr. Buttle's Uterine Scarificator and Leech, very efficient and convenient for abstracting blood from the engorged Cervix Uteri.

It is a very small spear-shaped knife mounted upon a long shank and handle. With these instruments, the most dependent parts of the cervix may be pricked in several places. The bleeding may be encouraged by injections of tepid water in large quantities.

FIG. 93.



Knife for Scarifying the Cervix.

In what time of the month is depletion the most useful? Before the commencement of the flow as a rule there is the greater amount of hyperæmia, and consequently is the time we might effect the most good from depletion. This is not always the case, however. There is no question that patients who have febrile excitement during the time of the antemenstrual congestion are very much benefited by local depletion at that time, but much more frequently the cases of lingering congestion will require it oftener.

When the menstrual flow is deficient and the uterus is not relieved by it many women are relieved by leeching or scarifying the cervix.

The congestion which lingers after the menstrual period and causes so much suffering, is generally, although not always, the result of a very scanty flow. In either case, when we determine to deplete, it should be done as early as the close of the flow, at latest, and if the flow is scanty during the discharge.

Independent of these physiological reasons for selecting these times for depletion, and notwithstanding the fact that thus used the depletion is generally attended with the best results, the very best rule for our guide will be found in the symptoms. In most cases there is a particular time in the month when the symptoms are the greatest in intensity; that is the time to deplete. In some this intensity occurs before, in others during or immediately after, the flow, while in still another class of patients it is midway between the periods. Rarely there are chronic cases where the congestive or inflammatory symptoms last all the time. When there is enough general vigor, these will be improved by depletion two or three times a month.

In connection with the measures for depletion, glycerin deserves to be mentioned. When placed in contact with the surface of the body, its strong affinity for water attracts the serum of the blood from the capillary bloodvessels very rapidly. This process is very much more active in the vaginal cavity, where the air is to a great extent excluded, as the whole capacity of the glycerin to take up moisture is exerted upon the membrane by which it is surrounded, and a large quantity of serum is rapidly abstracted from the diseased parts. The tumefaction and tension are at once removed and the pain relieved.

When a glycerin tampon is placed in the upper part of the vagina, it requires but a few minutes to establish a copious watery discharge, that lasts until the glycerin, diluted with several times its own weight of serum, is washed out and exhausted.

The relief which follows this application of glycerin is often even more marked than after depletion by leeches. Glycerin was first used as a dressing in vaginal operations by Dr. Sims, and it required but a little time for him to discover its valuable properties as a means of relieving inflammation and congestion. Used in this way I consider glycerin invaluable. As a lubricant or solvent for local applications I believe it to be worse than useless. To dissolve medicine in it, and then apply it to the cervix, is to insure the rapid removal of the medicine by a current of serum poured out from the surface. For this reason absorption from a glycerin solution, applied to the vaginal surface, is simply impossible. The efficacy of glycerin applications depend very much upon their preparation and the method of using them.

The best quality of cotton batting is the substance most appropriate with which to make glycerin applications. There is a great difference in the grades of cotton batting in the market, and we should be careful to get the best article made. It absorbs a larger quantity of glycerin, and does not wad up into such a compact mass as an inferior article does. In preparing the glycerin cotton for use, it should be made into a round ball, about an inch and a quarter in diameter, when loosely pressed in the hand. This may be secured by passing a strong thread around it, having the thread long enough to bring out of the vagina, so that the patient may be able to remove it; or the cotton may be rolled into the shape of a cylinder, two inches long and one in diameter, and secured by a thread. Every piece to be used should be thoroughly saturated with the glycerin. It is not sufficient to impregnate the surface of the cotton ball with the medicine, but every fibre should be saturated with it. This requires some time to accomplish, and it will be well for office use to submerge the cotton in a jar of glycerin and let it lie until it becomes saturated. When we use these, if they are thus saturated, they may be gently pressed until the glycerin will not flow from their surface.

The speculum will be necessary to a perfect application of glycerin, and the cotton must be placed in contact with the diseased surface. One or more of these pieces may be applied according to the capacity of the vagina or the amount of congestion. Glycerin thus used may be applied every third day, and if the cotton is well saturated, allowed to remain twenty-four hours, when it should be removed.

Cotton treated with glycerin in this way is not fit for a support to a displaced uterus, and too frequent use of these applications is occasionally followed by a sensitiveness of the mucous membrane that renders them intolerable.

It is not often that we rely upon glycerin applications for a cure, or even as the principal remedy. It is more commonly used as an adjuvant or a palliative measure to follow stronger applications. When we are under the necessity of making a strong application to the cervix and vagina, to follow it immediately by glycerin prevents the severe consequences that sometimes follow.

Local Alteratives.

The many remedies applied to the inflamed and abraded surfaces of the cervix, while they fulfil the general indication of changing the action of the nerves and vessels of the parts to which they are applied, their special effects are not precisely the same. There is certainly a wide difference between the local effects of tannin and nitric acid, of tincture of iron and nitrate of silver. Yet we find them all, and many others, used in the same kind of cases, one or two of them regarded as quite sufficient to cure a large majority of cases. This is the case with iodine, carbolic acid, and nitrate of silver. The practice of experienced gynæcologists, in the use of these local remedies, is remarkable in the fact that a very few can agree upon the same articles. To the inexperienced this is perplexing; but it is accountable for by the consideration that anything which will excite the vasomotor nerves sufficiently to increase the sluggish capillary circulation,—an essential item in the process of congestion and inflammation,—will induce a change in the morbid tissue to which it is applied. Astringents, stimulants, caustics, etc., have this effect, and so will the mechanical influence of friction or pressure. This consideration does not justify indifference as to the choice of local applications, for there are other differences than degrees of intensity in their action. There is, therefore, room and reason for selections, which will give quite a range in our choice. We should continually bear in mind that all irritants applied to the cervix as local applications, produce their effect upon the vasomotor nervous system primarily, and, secondarily, upon the circulatory and absorbent functions of the vascular system, and that in consequence of the unity of the vasomotor nervous apparatus of the cervix and body of the uterus, any impression made upon the neck is reflected upon the body, and conversely. The reflected influence is felt not only upon the vessels, but also upon the fibrous structure of the uterus. This explains the effects of therapeutical measures applied to the cervix.

There are also certain remedies which, when applied to the cervix, exert an influence through the blood. Mercury and iodine are unquestionably absorbed, and they may have a double influence upon the local disease, first, by the direct stimulating effect upon the nerves of the part, and, secondly, by their well-known general alterative influence. I have several times seen a marked ptyalism follow a single moderate local application of the solution of pernitrate of mercury, and it is not an uncommon thing for patients to complain of a metallic taste in the mouth in a very short time after an application of iodine or mercury. When thus they obviously enter the circulation, they may be expected to exert the same influence upon the effusion in the substance of the cervix and body of the uterus as if taken internally.

Locally iodine, in the form of the ordinary tincture, Churchill's tincture, and other alcoholic solutions, is a very strong stimulant, and is scarcely caustic in any of these solutions. It is, therefore, in these forms, an excellent application when we desire to produce a strong but superficial effect upon the mucous membrane of the vagina, cervix, or cervical cavity, and should not be repeated often. A solution made by dissolving one part each of iodine and iodide of potassium in one part of alcohol makes a very efficacious application, made by a swab once in a week or ten days to the erosions of the cervix, connected or not connected with laceration. Their local effects applied in this way excite the capillary circulation of the whole uterus to recuperative activity, and thus cure up the erosions and cause the absorption of the deposit in the areolar tissue. Iodine is again used in a different way and for another purpose; that is, in a non-irritating form, in which it may be absorbed and expend its influence as an alterative through the circulation. It is often dissolved in glycerin and applied on cotton to the cervix. The solution of iodine in glycerin for an application is almost, if not entirely, useless, so far as the iodine is concerned, for it is very soon washed out of the vagina by the serum drawn from the parts by the glycerin.

The very best way to obtain the fullest alterative effects of iodine as a vaginal application is to impregnate cotton-wool with iodine by mixing the crystals of iodine with the cotton, and then placing them in a well-stoppered bottle in a moderately warm place, when the iodine will become volatilized and diffuse itself thoroughly, fully, and uniformly in the cotton. This cotton may be applied through the speculum to the cervix, and allowed to remain there for twenty-four hours. This application may be used every fourth or fifth day. It is a very common practice to combine iodine and other medicines for local applications. Iodine and carbolic acid, called iodized phenol, is combined in the proportion of one part of iodine to four parts of carbolic acid.

This mixture is a favorite one with Dr. Robert Battey, of Rome, Georgia. He has written an able paper,* detailing its effects in endometritis. His indorsement, as a local application in this form of disease, is a sufficient guarantee of its usefulness.

The solution of pernitrate of mercury (acid nitrate of mercury), because of its valuable alterative influence, deserves particular notice. Unlike iodine it is strongly caustic, and can be made to destroy the parts to a great depth. In this respect, perhaps, it is about equal to nitric acid. The application of these remedies, however, can be made without destroying the tissues; and now that we know the salutary influence of our applications does not depend upon "burning off the ulcer," or cauterizing the abrasion, but that their efficacy depends upon the excitation they produce upon the submucous vessels, these medicines are used very differently.

The acid nitrate of mercury should be applied by the cotton swab so lightly as not to cauterize. The cotton should be dipped into the mercury solution and saturated with it, and, before being applied, pressed firmly between two wooden surfaces until it is merely moist with the solution. The cotton thus prepared is applied to the surface; it coagulates the mucus on the surface merely. The application in a few hours is followed by local reaction in the capillaries immediately beneath the part, which, in a certain degree, is salutary. It is not best to use this for congestion or inflammation, attended or not with abrasion, oftener than once in two weeks or a month. The second day after the menses is the best time. Carbolic acid, in solutions of various strength, is a popular medicine for local application to the cervix uteri. The 95 per cent. solution is equal in stimulating influences to that of the nitrate of silver of 20 per cent. strength. If used exclusively, or as the main article, for stimulating the inflamed cervix, it may be applied once a week.

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* Read at the meeting of the British Medical Association for 1879, held at Cork, Ireland.

Among the astringents the preparations of iron solution of the persulphate and the tincture of iron are frequently used. The tincture of iron, once in five or six days, is very generally used with great benefit.

The nitrate of silver, once so popular as a topical application, has fallen into disrepute, and is seldom resorted to by our best gynæcologists. The main objections to it are the great pain it often produces, the intensity of the submucous capillary excitement it causes, which sometimes extends to the cellular tissue; the amount of hæmorrhage it often causes, and its severe effects upon the nervous system. But the most important objections to it, perhaps, is the shrinkage and condensation it brings about in the cervix.

After it has been used with any thoroughness for a long time the cervix, and sometimes the uterus, is diminished in size and indurated. Although hæmorrhage is a common symptom immediately following the application, it is not unusual that the protracted use of it leads to suppression, more or less completely, of the menstrual flow. It must be admitted, however, that these objections apply more to what, in our present knowledge of its effects, we would consider the injudicious application of it in solid form. In solution it may be made to produce an alterative influence that is difficult to effect with any other remedy.

A 50 per cent. solution, applied with the swab, is not a caustic, and is not amenable to the objections just above mentioned, and intended to apply to the solid form.

Whatever the application may be, it should not be repeated if followed by evidences of serious irritation, as pain, lasting for over an hour; tenderness in the iliac or hypogastric region; chilliness or febrile excitement.

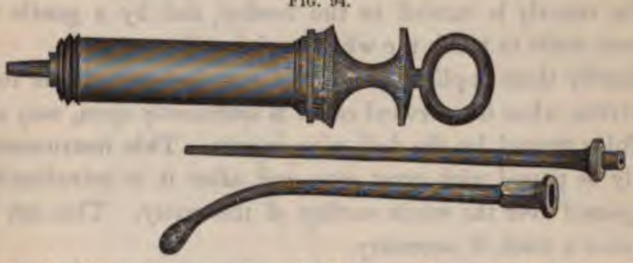
When an application is made from which we expect any considerable pain or reaction the patient should lie down and remain quiet until all sense of inconvenience has passed away.

As before remarked, we may frequently secure immunity from suffering by following the application with a tampon of glycerin cotton.

Treatment of Endometritis.

When the disease is confined to the cervical cavity the simpler forms can be cured by the same kind of application made use of in the treatment of ordinary inflammation and abrasion of the cervix. To make these efficacious it will be necessary to remove the mucus from the cervical cavity by wiping it away with cotton, when that is practicable, and, when not, it may be removed by such a syringe as is represented in Fig. 94.

FIG. 94.



Small hard-rubber Syringe, to wash out the Vagina, or cleanse the Neck of the Uterus.

With the ordinary flexible applicator, wrapped with cotton, the remedy is passed into the cervical cavity up to the internal os uteri. The same precaution should be observed in other cases in which the application is made.

The treatment of these simple cases is really not more difficult than when the disease is on the outer cervical mucous membrane. And as the external cervical inflammation, with erosions, coexists with the endocervical, they should both be treated at the same time, by first making the application externally, and then passing it into the cervical cavity.

We sometimes meet with an obstinate yet uncomplicated form of endocervicitis, or cervical catarrh, that resists all of the usual remedies.

The cervix is filled with an extremely tenacious mucus that is removed with great difficulty, the cavity of the cervix is enlarged, and when the mucous membrane is exposed may be seen to be very rough, granulated, and scarlet red. The granular eminences are the enlarged muciparous glands, the glands of Naboth. Dr. Sims* reports cases of this kind cured by thoroughly scraping the cervical cavity with a sharp curette, and afterwards touching the surface lightly with the actual cautery. Dr. Isaac E. Taylor, of New York, says he has resorted to this treatment with great success.

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* Transactions of the American Gynæcological Society, 1879.

When the inflammation extends to the cavity of the body of the uterus the treatment is more difficult of accomplishment, attended with less satisfactory results, and sometimes followed by severe symptoms.

When it is uncomplicated, and the cervical canal at both extremities are patent, the treatment is generally simple and efficacious. The applications adapted to this form of disease are the same as for endocervicitis and are made in the same way. The applicator charged with the remedy is carried to the fundus, and by a gentle rotary movement made to touch the whole endometrium.

Ordinarily these applications are not very painful. This form of endometritis, when the cervical canal is sufficiently open, may also be successfully treated by the dull-wire curette. This instrument may generally be passed with great ease, and, after it is introduced, it is gently passed over the whole surface of the cavity. This can be repeated once a week if necessary.

I could report several cases where the curette used in this way has done more good than any other remedy I had used, and apparently completed the cure.

The curette in these cases is used, not for the purpose of cutting away any portion of the living membrane, nor for removing growths or granulations, but for the purpose of stimulating the circulation in the mucous membrane.

When endometritis is complicated, the treatment will of course be very much modified by the complicating circumstances. Stenosis from contraction is a very inconvenient complication, because it must be overcome temporarily at least before our applications can be made complete.

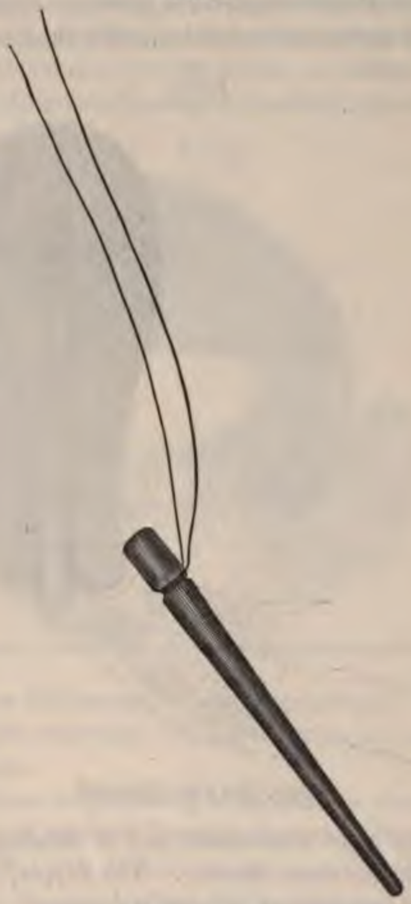
In this form I have frequently succeeded by using the slippery elm tent. The tent can be made to overcome the stenosis and at the same time exert a salutary influence by pressure upon the mucous membrane of the uterine cavity, and thus suffice to effect a cure.

The slippery elm tent is made about one inch and a half, or one and three-fourths long, and the sixth of an inch in diameter at the large extremity, and small enough at the other to pass through the narrowest place. Every tent should be securely fixed by threads so that it cannot be lost in the cavity, and may be easily removed.

When we use them we thoroughly moisten them for two-thirds the distance from the extremity to be introduced. This moistening may be done in a moment by dipping them into water and then pinching and bending them.

The part thus moistened should be soft enough to bend in any direction with very slight force. When the cervix is exposed we take the dry end of the tent in our dressing forceps and pass the moistened end into the uterus. The pliability of the tent enables us to pass it easily into the most tortuous canal. After having passed one, if we are not satisfied, we may introduce one by the side of it, and then two, three, four or a dozen until we have dilated the canal suffi-

FIG. 95.

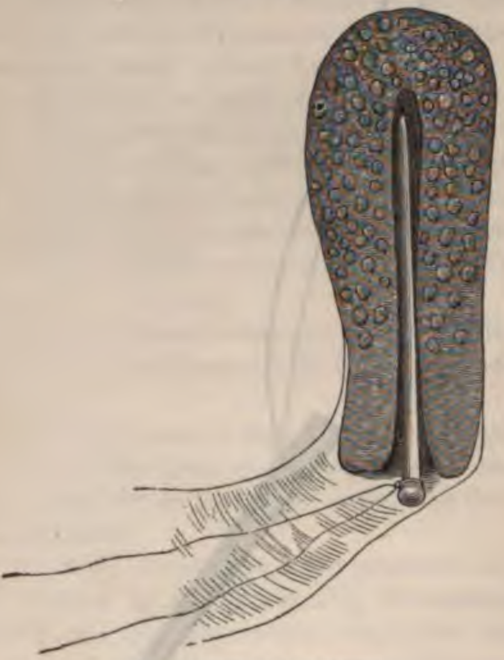


Slippery Elm Tent.

ciently. These may be allowed to remain several hours if necessary, to cause further dilatation. But often they may be removed at once, and the cervix will be large enough to receive an application. I know, however, from frequent trial that no other application is necessary to cure many cases of endometritis.

When I introduce one or two tents, in cases where stenosis complicates endometritis, I instruct the patient to remove the tent by drawing upon the thread whenever it gives her decided pain, and to not let it remain more than twelve hours if it does not give her pain.

FIG. 96.



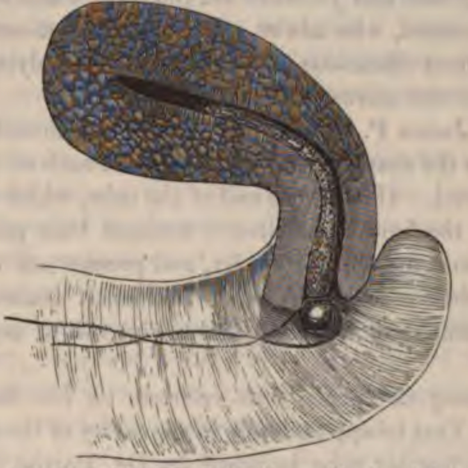
Slippery Elm Tent introduced.

This is by far the most comfortable way of dilating, and according to my observation the most effective. The slippery elm has the advantage of being inexpensive and easily procured. In ten minutes the practitioner can make a dozen with his pocket-knife, out of the dry bark found in any drug store. When used in this way, and for this purpose, the dilatation is very moderate, but by repeating it becomes permanent more readily than by the use of any other means. I can say further that I have had no bad results from slippery elm tents when used in this way, and in those exceptional cases alone where a mere touch of the probe is painful do I apprehend the possibility of harm. It is the safest means to dilate the cervix now in use, and when several are introduced by the side of each other they may be made to dilate the cervical cavity in a few minutes.

This tent also may be made to shield the cervix from the effects of the pressure of the more energetic dilators. If we wish to dilate the cervix largely we may pass a sea-tangle or sponge tent, and then fill the cervical cavity around it by slippery elm tents.

As the sea-tangle or sponge expands, the elm tents shield the delicate mucous membrane from contact with the hard tent, and when the time comes to remove it there will be no difficulty in getting it away. Complicating misplacements, especially retroversions, should be corrected as an indispensable item of treatment. After the correction is made the treatment will not differ in any respect from the uncomplicated case.

FIG. 97.



The Uterus in a state of Anteflexion, with the Slippery Elm Bougie introduced into it.

Flexions are more embarrassing complications than displacements, because the point of greatest flexion is stenotic. Sometimes the stenosis is so great that it is difficult to pass a small sound. (Fig. 97.) The correction of the complication and the treatment of the inflammation may both be accomplished at the same time. These are the cases in which the slippery elm tent will be of the greatest service. They are often attended with the dysmenorrhœa of obstruction. We can dilate and, to a certain extent, correct the flexion every time we make an application, by using one or two elm tents before introducing the application. But generally the tents, if allowed to remain in the cavity, as directed in the treatment of stenosis just described, will exert a salutary effect by pressure.

When the practitioner finds that a pessary can be used to advantage it may be employed at the same time with the other treatment.

When complicated by menorrhagia both diseases may generally be cured by the curette used as above directed.

I have said nothing about intrauterine injections as a means of curing endometritis. The subject has been very thoroughly discussed by the members of the profession, and few prominent gynæcologists resort to this means in any form or at any time, except in the puerperal condition of the organ. For my own part I have never injected the uterus for endometritis, and I do not hesitate to condemn it in such cases as dangerous, and yet there are those for whose opinions I have the highest respect, who advise and employ injections, and speak of them as the most efficacious of all methods of applying medicines to the interior of the uterus.

Professor James P. White,* of Buffalo, has invented a pipette of glass, bent to the shape of the uterus, with a bulb of india-rubber at the external end. He dips the end of the tube, which is very minute in size, into the fluid he desires to use, and then passes it through a speculum into the uterine cavity, and presses out in drops, or as much as he desires to leave there. The small quantity thus introduced he claims cannot, and does not, give rise to any grave symptoms.

In discussing the paper thus referred to, Dr. Mundé, of New York, said: That he applies fluids to the cavity of the uterus through a very small flexible tube invented by Dr. Buttles, of New York. He thinks, cautiously done, this is a safe and efficacious way of treating the interior of the uterus. This method of using fluids in the cavity of the uterus can hardly be classed among injections, as the term has been heretofore understood.

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* Paper read before the American Gynæcological Society, 1879.

CHAPTER XIX.

LACERATIONS OF THE CERVIX UTERI.

THE consequences of this accident are so serious, and its occurrence so frequent, that it demands a prominent place in any text-book on gynæcology.

While many observers had noted the presence of lacerations of the cervix uteri, their importance until lately has been underrated; they were thought, in fact, to give rise to no appreciable effects.

This view was encouraged by the fact, that a proper treatment of their consequences generally resulted in a temporary removal of the symptoms, and sometimes the cure was so nearly complete as to pass for an entire recovery.

Until Dr. Emmett made his remarkable researches upon the subject, lacerations of the cervix passed for one of the forms of ulceration, and was described as ulceration of the cervix uteri. Now, however, owing to the enthusiasm of the discoverer, many of his students have gone to what I consider an unjustifiable extreme in the other direction, expressing their opinions that, instead of everything being called ulceration, the proper term will be laceration of the cervix.

To Dr. Emmett belongs the credit of first appreciating the importance and appropriately treating this accident.

It very seldom occurs to any man to have the opportunity of giving to the profession so complete a description of an abnormal condition, and to perfect the process of cure, so that there is left to others no room for improvement. Yet this is the good fortune of Dr. Emmett.

Causes.

Laceration of the cervix occurs during labor or expulsion of the contents of the uterus in abortion. Sudden expulsion of the head in cases where the cervix is not dilated sufficiently may eventuate in its rupture.

It would be foreign to my purpose at present to discuss the various causes of the rigidity which prevents the ready dilatation of the cervix. They certainly are numerous, and of frequent occurrence, as any obstetric practitioner is aware. Nor do I consider it necessary to criticise the early and frequent use of the forceps practiced by the accoucheur of the present day. The time has not yet come when the facts are at hand to justify such criticism. It is in order, however, to inform the obstetrician that his patients come to the gynæcologist with laceration of the cervix in great numbers. Dr. Emmett finds laceration in about 16 per cent. of the cases coming to him for treatment on account of uterine disease. Dr. Mundé puts them down at about 17 per cent. Dr. Montrose A. Pallen at 40 per cent., and Dr. Goodell says, one in every six of his dispensary patients has laceration of the cervix. My own observation confirms the opinion that these lacerations are of very frequent occurrence. Observing the difference in virgin, as compared to the parous uteri, one must conclude that slight laceration from labor was the rule.

Can extensive laceration of the cervix always be avoided? This question brings to mind the frequency with which the perinæum is torn under the management of the best practitioners, and the universality with which slight laceration of that body takes place in primiparous women.

The Degree, Locality, and Direction.

The degree of laceration varies from the slight, almost inappreciable rupture to the splitting of the cervix into and above the vaginal junction. It may be confined to one side, while the other retains its integrity, or both sides may be torn, one slightly and the other largely, or both to their utmost extent.

The locality of the laceration is much more frequent in a line corresponding to the junction of the anterior and posterior halves of the cervix, but sometimes the anterior or posterior lip of the uterus is torn in the centre in the various degrees above mentioned; in others both the anterior and posterior lips are thus lacerated. In rare instances we find the two lateral and the two central lesions in the same cases, making the cervix project into the vagina with four points. I have seen one case where the anterior lip was split up to the vaginal junction, and then torn across to the left side, the portion torn hanging down into the vagina.

Dr. Emmett thinks that the anterior and posterior labia are frequently torn, but from the direction of the vaginal pressure they generally heal up, and consequently do not often come under our observation. It is not unlikely, as he observes, that many lateral, as well as central, lacerations close up during the term of lying in, and therefore never give rise to any inconvenience.

Effects of the Laceration.

If we were guided by what we know of traumatic lesions elsewhere, as well as what we find in the cervix itself, we would, *a priori*, infer that inflammation was an early consequence of the accident.

The torn edges, much more frequently than otherwise, become covered with cicatricial tissue, the result of inflammatory exudation, and a large amount of this cicatricial deposit is ordinarily found in the angle of the laceration. Sometimes this last point of deposit presents a tough, hard node, that must be removed with great care to secure perfect union.

This is not all the effects of the inflammatory action. Sometimes a fibrino-plastic exudation in the connective tissue of the two cervical flaps takes place, and they become large, dense, and hard.

The surgeon will often find the cervix indurated so greatly that it resists the instruments, especially the passage of the needles; and he will find, as a rule, the more extensive the laceration, the greater will be this particular change, showing that they are all the seat of the most intense inflammatory action, and the converse.

Another effect of the laceration on the parts is, at first, an inflammatory action in the mucous membrane of the cervical cavity. Fibrino-plastic deposits occur in the deeper portions of the membrane, which becomes turgid and redundant; its epithelium is shed, and it presents a scarlet, rough surface. Sometimes the redundancy of the membrane is so great that it rolls out and forms a mass, fungiform in appearance.

As another consequence of this fibrino-plastic exudation, the mouths of many of the ducts leading from the glands of Naboth are closed, and the mucus of the glands is confined within their cystic cavities, or the whole gland is surrounded by the exudation and becomes involved in the hardened mass. Thus, in different cases, we find the glands presenting the appearance of translucent blebs or shotlike granulations.

Effects on the Body of the Uterus.

The inflammatory process going on in the cervix, resulting from lacerations, arrests involution, and the uterus remains large and vascular; in other words, in a state of subinvolution until the chronic inflammation is removed by proper treatment of the mucous membrane and submucous tissue, and the laceration closed by trachelorraphy.

That lacerations which do not cause and maintain this uterine hyperæmia are innocent of general disturbances, is admitted by Dr. Emmett, as I have shown elsewhere by quotations from his work.*

Complications.

Other embarrassing complications of laceration of the cervix are displacements, prolapse, and retroflexions, and lacerations of the perinæum and vagina, and cellulitis and local peritonitis. These complications increase the hyperæmia of the uterus,—retroflexion, by constriction of the cervix and consequent turgescence of that portion of the uterus with this; and prolapse, by altering the direction of the veins which carry the blood from the uterus, augmenting the previously existing hyperæmia of that organ. The uterus is thereby increased in weight, fibrino-plastic changes produced in its substance, and the nutrition of the mucous membrane of its cavity disturbed in a marked degree.

Symptoms.

The general symptoms following laceration of the cervix are not distinctive. That lesion produces, through its effects upon the body and cervix uteri, the symptoms given in detail elsewhere, under the head of Hysteropathy, and consequently need not be repeated here.

Diagnosis.

This cannot be made out by subjective symptoms alone, and we must depend upon a thorough examination of the parts by the touch and use of instruments. By careful examination with the finger the notch in the side, when large, will be easily detected. The finger should pass along the vaginal wall to its junction with the cervix, and, keeping it in the cul-de-sac, passed all around so as to encircle the neck.

In most instances, as the finger passes over the side, we will recognize the fact that at that point the neck does not extend below the vaginal junction. The finger will sink into a depression between the labia.

When the finger is educated in the vaginal touch, the lesion will be easily recognized.

The sound will generally pass deeper into the body of the uterus than it will in the normal state of that organ, because the uterus is in a state of subinvolution.

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* Article on Subinvolution.

When well exposed by the speculum, the cervix will generally be found covered by a muco-purulent fluid, enlarged, the labia turned out, the exposed cavity of the neck intensely red, and the surface roughened in consequence of the loss of epithelium, and an enlargement of the papillæ and muciparous glands. The infallible test, however, is to seize the extremities of both labia with tenacula and draw them down together, somewhat forcibly. If the cervix has been torn on the side, the notch will be plainly seen. If there is no laceration, the cervix will be truncated instead of bifid, and the points of the tips can be drawn down only a trifling distance below their lateral junction.

Treatment.

The treatment may be preventive, preparatory, and operative.

The prevention of laceration of the cervix does not usually come within the province of the gynæcologist. The obstetrician has charge of the patient at the time of the accident, and upon his skill will depend such immunity as can be secured by science. The probability is that it cannot be prevented in most instances in which it occurs, no more than laceration of the perinæum can always be prevented. I can easily see how an early rupture of the membranes, a too early use of the forceps, or an ill-advised administration of ergot would favor laceration of the cervix.

Now that their attention is called to the subject, obstetricians will no doubt soon be able to furnish the facts upon which may be based a judicious preventive treatment; at present it must be founded upon a rational view of the processes of labor.

Preparatory Treatment.

The treatment preparatory to an operation has been as fully developed by Dr. Emmett as any part of the subject, and my experience corroborates the correctness of his teachings.

The object of the preparatory treatment is to bring about a plastic condition of the parts to be united. This is accomplished by correcting any deviation from the normal state of general health by tonics, nutritious diet, exercise in the open air, promoting a soluble condition of the bowels with appropriate laxatives, etc.

A robust state of the general health is an all-important part of the preparation in this as in all plastic operations.

The local preparatory treatment consists, first, in placing the uterus in such position as is necessary to secure the greatest possible freedom of circulation, for the purpose of reducing the general hyperæmia of that organ; second, making use of such applications as will reduce the hyperæmia of the uterus and cervix; and, third, where there is induration from fibrino-plastic exudation in the connective tissue of the cervical flaps to as far as possible dissolve it out and bring about a normal condition of the structure.

The first indication is met by a judicious use of pessaries of cotton, lint, and the closed-lever instrument.* The second, calls for the use of glycerin, cotton tampons, local bloodletting by puncture with Buttle's lancet-shaped knife, or other instrument, which will answer the same purpose, and large hot-water injections. An employment of these means perseveringly for a sufficient length of time will be pretty sure to effect this object. The third will generally require more time, and is of equal importance with the other two. The applications for this purpose consist in remedies that will stimulate the absorbents to the removal of the indurating substance. Dr. Emmett relies to a great extent upon Churchill's tincture of iodine for this purpose. He applies it freely to the whole of the denuded mucous membrane about twice a week, followed by glycerin dressings. It is doubtless an excellent application.

When the gland cysts are large and numerous he pricks them with the lancet-shaped knife to void their contents and to deplete them of blood.

In many cases of long standing, and where the pathological changes are greatest, the preparatory treatment will require to be employed for several months to secure the best results. In others of recent standing, and where the changes consist mostly of hyperæmia a few weeks will suffice.

The Operation.

The day before the operation it is a common practice, and I think a good one, to move the bowels pretty thoroughly by giving a laxative. At the time of the operation I usually give the patient ether. This, however, is not absolutely necessary, especially in cases of moderate extent, as the operation is not very painful.

To Dr. Dudley, of this city, is conceded the honor of first giving this operation an appropriate name, "trachelorraphy." Two or three days after the menses cease to flow is the best time to operate.

The patient is placed in Sims's or Simon's position, and the vagina dilated as largely as necessary to bring the cervix into view. The neck is then seized with a vulsellum forceps, and drawn down until the lips can be transfixed from before backward by a strong needle armed with a double thread.

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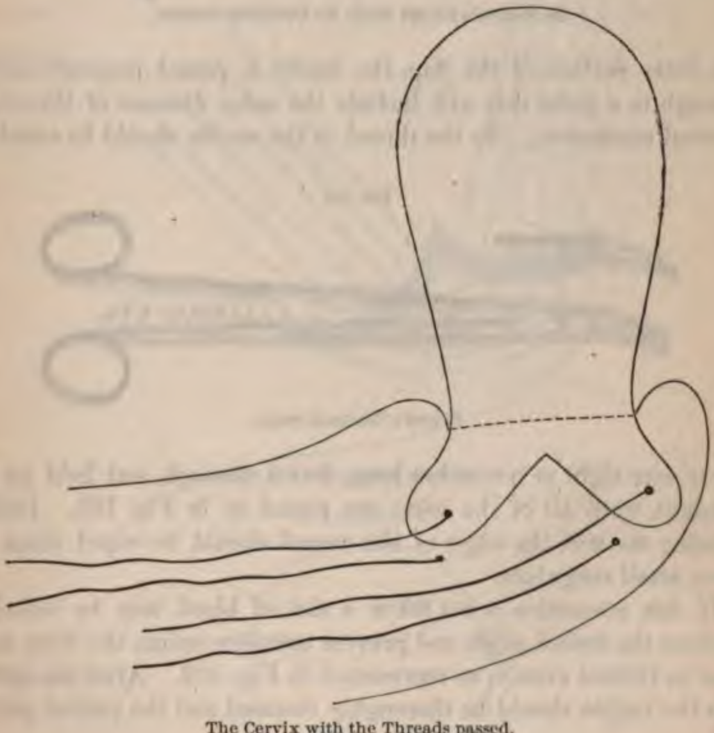
* See Displacement.

The threads are drawn through enough to form two loops, each through one of the labia, of sufficient length to pass several inches out of the vaginal orifice. With these loops of thread the cervix can be very completely fixed, and its position varied as the convenience of the operator may require. The loops of thread may be held up by an assistant, subject to the direction of the surgeon.

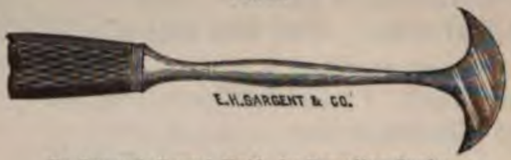
FIG. 98.



The Cervix with the Threads passed.

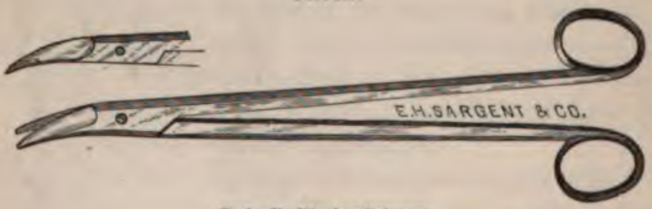
When thus prepared the operator seizes the edge of the laceration with a tenaculum, and with scissors pares off all the cicatricial membrane. The denudation should be carried up into the angle between the cervical flaps and the wedge of cicatricial deposit thoroughly removed. In doing this care should be taken to cut off any irregularity of surface on the edge of the laceration, so that the edges of the two sides may be brought into smooth coaptation. After the denudation is perfected, and the hæmorrhage ceases, the stitches may be introduced. Beginning an eighth of an inch from the incision on the outer surface of the flap, the needle is passed perpendicularly through to a point that will include the same distance of the endocervical membrane. To the thread in the needle should be attached silver wire eight or ten inches long, drawn through and held by an assistant, until all of the wires are placed as in Fig. 101. Before twisting the wire the edges of the wound should be wiped clean of every small coagulum.

FIG. 99.



Dr. Sawyer's Round Knife for Denuding Surface.

FIG. 100.



Byford's Uterine Scissors.

If this precaution is not taken a clot of blood may be included between the united edges and prevent complete union, the wires may then be twisted evenly, as represented in Fig. 102. After the operation the vagina should be thoroughly cleansed and the patient put to bed.

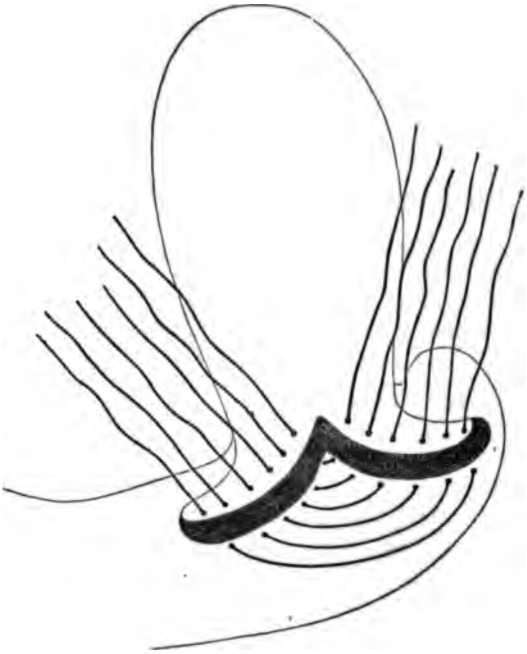
This operation is a simple one, as the reader will see, under favorable circumstances, *i. e.*, when the laceration is lateral, and does not extend above the vaginal junction. When it is stellate, or there is much loss of tissue, the ingenuity of the surgeon will be severely taxed.

I am not informed as to the average number of successes in the operation of trachelorraphy, but I know that failures are not infrequent, and it may be well to consider what are the reasons of failure.

Among these reasons is an imperfect performance of the operation, but chief among them is imperfect preparation.

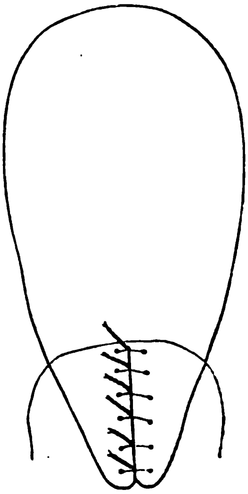
The after-treatment is of great importance, especially for the first few days. The patient must remain very quiet and avoid all causes

FIG. 101.



The Mode of Passing the Sutures.

FIG. 102.



The Sutures Properly Placed and Sutured.

of vascular and nervous derangements. After this time there can be more freedom of motion. It is desirable that the bowels be not moved before the end of this time, when a laxative may be given, and means taken thenceforward to keep them in a soluble condition. If we do not conclude to prevent the evacuation of the bowels we should administer diet and saline laxatives to soften the fæces.

It has been usual to draw off the urine for the first four or five days, but this is not essential, as it is only necessary to avoid straining.

The diet must be light, and for the most part liquid, for the first few days.

The vagina should be kept clean by warm-water injections two or three times a day from the beginning to the end of the after-treatment. I have been in the habit of removing the sutures about the tenth day, but in the majority of cases they might be taken out on the seventh or eighth day.

CHAPTER XX.

OCCASIONAL UNTOWARD EFFECTS OF UTERINE MANIPULATIONS AND OPERATIONS.

For the purpose of making the student understand the necessity of great caution and gentleness in examinations and operations upon the uterus, I subjoin a summary of the researches of Dr. George J. Engleman, of St. Louis, on the subject.*

Many of the cases mentioned by Dr. Engleman occurred in the hands of the most accomplished practitioners in different parts of the world. A simple digital examination of the unimpregnated uterus, in the hands of Nelaton, was followed by fatal peritonitis.

Several cases of death from peritonitis were the result of the use of the uterine sound; some because the sound perforated the uterine tissues on account of fatty degeneration rendering them soft and permeable; others without any apparent reason.

There are also cases in which untoward results followed the use of vaginal injections of warm water.

A number of deaths are recorded in which peritonitis was caused by the use of sponge tents. One case is mentioned of severe peritonitis from replacing the uterus by the use of the sound. There is always more or less risk in this operation. Dr. J. M. Allen gives a case in which death was caused by the appplication of tincture of iodine to the cervix.

Cellulitis has followed the application of various substances to the cervical and uterine canal.

The danger of injections into the uterine cavity is shown by allusion to several cases of death in the hands of skilful gynæcologists. The most trivial operations on the uterus or other organs in the pelvic cavity are sometimes followed by fatal results. Even scarification of the cervix has been the cause of fatal peritonitis.

I have known of two cases of death follow incision of the cervical canal, and several others are mentioned in Dr. Engleman's paper. Operations for lacerations of the cervix have been followed by death in several instances. The most careful removal of small polypi may be the cause of fatal peritonitis.

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* Paper read before the Missouri Medical Society, and published in September No., 1880, American Practitioner.

Perineorrhaphy has, in a number of instances, been followed by similar consequences. Stem pessaries, when incautiously used, are very dangerous instruments.

It therefore appears that any kind of manipulation of the uterus or its lining membrane is, under certain inscrutable circumstances, liable to start an acute peritonitis. One of these circumstances, and perhaps the most frequent one, is the existence of an inappreciable grade of inflammation in the cellular or peritoneal structures immediately surrounding the uterus.

Dr. Noeggerath* believes that latent gonorrhœa is very often the character of this lurking inflammation.

It would seem that the use of sponge tents, intrauterine stem pessaries, intrauterine injections, intrauterine applications, and cutting operations on the cervix uteri, were especially dangerous.

We should exercise great care in all our manipulations of the pelvic organs, and leave no precautions known to gynæcology unemployed to avoid the dangers that occasionally present themselves when we venture upon the use of sponge tents, intrauterine injections, stem pessaries, or operate on the cervix.

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* Gynæcological Transactions, 1876.

CHAPTER XXI.

HYPERTROPHY OF THE CERVIX.

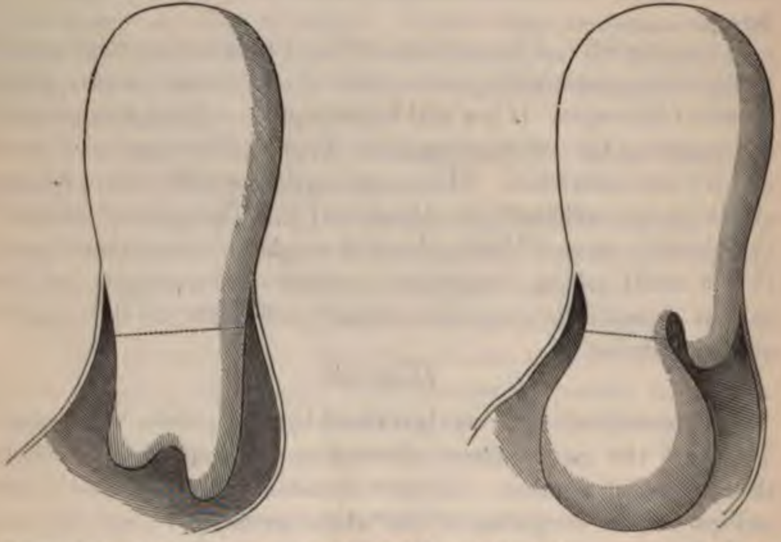
HYPERTROPHY of the cervix is different from enlargement caused by fibrinous accumulation, and consists of an increase in the proper tissues of the organ. It is a real hypertrophy. Although not nearly so frequent as the enlargement from chronic inflammation, it is not of very rare occurrence. The symptoms do not differ from prolapse of the uterus sufficiently to characterize it. The patient generally experiences a sense of bearing-down or weight on the perinæum, pain in the sacral region, leucorrhœa, sometimes menorrhagia, and the various sympathetic symptoms already sufficiently dwelt upon of uterine irritation.

Diagnosis.

Upon examination the cervix is found hypertrophied and enlarged. There are two general forms observed so well marked as to entitle them to special mention. The first is such as we usually find in the nulliparous, an elongation of the whole cervix, and some, but not generally, very great circumferential increase of size, and without much deviation from shape. This form is seen in Fig. 103. The next variety is an elongation and enlargement of the anterior or posterior labium, as represented in Fig. 104. I am not certain, from my own observation, whether this is always a pure hypertrophy or a mixture of this process with fibrinous infiltration; probably the latter.

The only appropriate *treatment* is amputation, and it is generally sufficient to remove all the disagreeable symptoms resulting from it. The plan I have usually pursued in removing this growth is by *ecrasement*. The chain of the écraseur is passed around, at the place where the point marked out by the dotted line is seen in the figures, and the ratchet slowly worked until the division is complete. This operation is easily performed, and is perfectly safe when carefully done, and the parts cicatrize in a few days. An inconvenience mentioned by Dr. J. Marion Sims is encountered, in some instances, in amputating the first variety, viz., the contraction of the opening of the cervical cavity. It is an inconvenience, however, that is of no great importance generally, and may be remedied by making a small incision with a blunt-pointed bistoury immediately after the operation of amputation. Dr. Sims amputates the cervix with scissors. He exposes the organ with his speculum, cuts the parts squarely through at the dotted lines, and then draws the mucous membrane together

Fig. 103. Fig. 104



Figures showing two Varieties of Hypertrophic Elongation and Enlargement of the Cervix Uteri. The Dotted Lines show the Proper Place for Amputation.

over the cut surfaces with silver sutures. This lessens the size of the cut surfaces and the parts heal more readily.

Elongation of the Supravaginal Cervix.

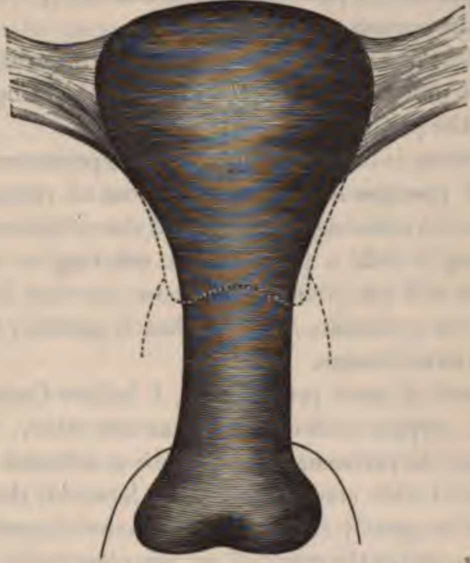
This condition of the cervix so completely simulates procidentia of the uterus that upon a superficial examination it may be mistaken for that condition. The elongated vaginal cervix with the vagina are protruded from the external parts. The vaginal walls are everted anteriorly and posteriorly, forming in most instances cystocele and rectocele. Sometimes the protrusion is less extensive, and the cervix alone protrudes from the external parts.

The diagnosis is made by introducing the sound. That instrument will enter to a much greater depth than when the uterus is prolapsed, sometimes five or six inches.

2d. By placing the patient in the knee-chest position. In this posture the cervix very readily enters the pelvis and rises up to its normal position. If the sound is now introduced it will not enter the uterus to so great a depth.

3d. By introducing the finger into the rectum while the patient is standing, we can feel that the length and shape of the uterus are greatly changed from the normal. The fundus and body will be found *in situ*, and from it the attenuated and elongated supravaginal cervix can be traced downward to its attachments to the vagina.

FIG. 105.



Supravaginal Elongation of the Cervix.

This elongation of the cervix is called tensile elongation by Dr. Matthews Duncan, and, doubtless, as Dr. Goodell* believes, is the result of hypertrophy and stretching, instead of true hypertrophy. It would seem at any rate that the elasticity of the cervical tissues was very much increased, as in the erect posture, with the slight weight of the relaxed vaginal walls and the bladder and rectum, the neck becomes elongated, and when the patient lies down retraction may soon follow.

The vaginal portion of the cervix in most cases is considerably hypertrophied, and in respect to length and volume is much above the usual dimensions. There are other conditions in connection with tensile elongation of the cervix that have an important bearing upon the etiology and treatment. Almost all the means of support in the lower part of the pelvis are in a state of great relaxation, and, instead of being retentive, they contribute to the aggravation of the abnormal condition of the cervix.

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* Gynæcological Transactions, 1879.

This is especially the case with the vaginal walls, the vesical ligaments, connective tissue, and fascia.

The perinæum is either anatomically deficient from laceration, or destitute of that tonicity which makes it capable of resisting the protrusion of the cervix. In contrast with this the supporting apparatus in the upper part of the pelvis retains its natural, if it is not endowed with more than normal retentive power.

The treatment of this form of elongated cervix will depend somewhat upon the time it has lasted, the extent of the elongation, and the relaxation of the perinæum.

When the lesion is of recent origin, and the perinæum has not been lacerated, and possesses a reasonable amount of resistance, we may hope to succeed in restoring the shape and size of the cervix by properly supporting it with a pessary. In selecting an instrument for this purpose it will not often do to choose one that has its bearings wholly upon the perinæum, but one that is partially maintained in position by external means.

In the hands of most practitioners, I believe Cutter's or Scott's will fulfil the purpose more certainly than any other. While both of them rest upon the perinæum they may be so adjusted that they will not bear upon it with much weight. If, however, the perinæum is in a lacerated or greatly relaxed state we must depend mainly upon surgical means, and as the result of my own observation, I do not hesitate to indorse the practice of Goodell as set forth in the paper above referred to, viz., to amputate the vaginal cervix and operate upon the perinæum afterward if necessary. I do not consider it necessary to remove the cervix at the vaginal attachment, but think it better to leave a margin of one-fourth of an inch. Great care is necessary in removing the cervix in this condition to avoid wounding the bladder or opening the peritoneal cavity.

Whether the amputation is done with scissors, knife, galvano-cautery, or écraseur, we should take measures to secure ourselves against this accident. The most convenient way to do this is to pass two strong steel wires through the cervix slightly below the junction of the vagina and cervix. The wire or chain of the écraseur may be applied close up to this wire; this will prevent any traction upon one part more than another. The scissors may be used and the cervix amputated according to the method of Dr. Sims. The patient must remain in bed several weeks to secure the best results.

When the perinæum has been lacerated perineorrhaphy should be performed before the patient attempts to exercise on foot.

If the perinæum does not need restoration, and there should be any tendency to continuance of supravaginal elongation after the operation, Scott's pessary should be introduced, to supply the support that the perinæum in a healthy condition would give.

Success in this operation will depend very greatly upon the treatment and care the parts receive for some time after the patient resumes the erect posture and her usual exercise.

CHAPTER XXII.

PERIMETRITIS.

I USE the term perimetritis to signify inflammation of the tissues surrounding the uterus, and include both cellulitis and local peritonitis under this head.

There is an abundance of areolar tissue in the pelvis. It is between the bladder and pubis, the bladder and vagina, the vagina and rectum, but in greater amount between the sides of the vagina, uterus, and bladder, and the pelvic bones. In a loose manner it fills up the space indicated, and is covered by, and included in, the folds of the lateral or broad ligaments of the uterus. Within these folds of the peritoneum, the ovaria, the Fallopian tubes, and the round ligament are included with the cellular tissue. Inflammation attacks this areolar tissue not unfrequently on one side, and involves the tube, the ovary, ligament, and peritoneal covering; less frequently both sides are simultaneously inflamed, and still less often that part between some of the hollow organs of the pelvis is affected, when we have a comparatively small point of disease, as, for instance, between the bladder and vagina, or this last and the rectum. This is perimetritis. There is a strong tendency when inflammation is lighted up in any part, to spread to the space at the side of the uterus and vagina covered by the broad ligament, on one or both sides. The inflammation is apt to run its course rapidly, as is usual in areolar tissue, either to resolution or suppuration, and as this tissue is abundant, and the organs in the pelvis easily moved, the effusive products are likely to be copious. In the first stage of inflammation, serum is rapidly poured out between the folds of the peritoneum by the side of the uterus and vagina; it pushes these organs to one side of the pelvis, and forms a prominent inflammatory tumefaction at the side of the pelvic cavity, within easy reach of the finger. This tumidity becomes harder in a short time, and forms a solid medium of connection between the uterus and wall of the pelvis, indicating the change from serous to fibrinous effusion. Within a week or ten days, in very acute cases, in others from two to four, or even six weeks, the areolar tissue is broken down into copious suppuration. In some instances the inflammation does not advance beyond the stage of serous effusion.

When, after lasting for an uncertain time, the symptoms begin to subside, the tumefaction disappears, and the patient soon recovers her health; while in others it is arrested after fibrinous infiltration has cemented the parts solidly together. Although the symptoms are moderated from their first acuteness when this is the case, some of them, as undue sensititiveness and sense of weight, and other kinds of pelvic distress, remain for a considerable time, and the patient recovers from the attack very slowly, if ever completely. When suppuration takes place, if it is completely and readily evacuated, the patient very soon regains her health and strength. In some patients of broken-down or damaged constitutions, sloughing and extensive ulceration increase the damage to the organs. I once saw a syphilitic patient in whom extensive and rapidly spreading ulceration opened the rectum, vagina, bladder, and, finally, the peritoneal cavity. Suppuration in this case was unhealthy and ichorous, smelling strongly, and produced excoriation of the parts over which it flowed. If the evacuation of the pus is imperfect on account of opening into the rectum or bladder, and even in the vagina, the symptoms may be prolonged for months and even years. And in some cases where the evacuation of the pus and subsidence of the inflammation seemed complete, the disease recurs usually with diminished acuteness a number of times. I once had a patient in whom an attack of perimetritis was contemporaneous with incipient pregnancy for four different times while under my care. In each one of these four times, the inflammation commenced at about the time the menstrual flow ought to have appeared after conception. Every time there was copious suppuration, a free discharge of the pus, and, to all appearance, a complete recovery from the inflammation. The intervals were about two years in duration. I have seen three instances in which the recurrence of the inflammation had occurred at irregular intervals from three months to a year for over six years, another ten, and one as much as eighteen years. In this last case, the abscess was situated at the left side of the uterus, and usually after a week or ten days of acute suffering, it discharged about a half ounce of fetid pus, and then disappeared, so that nothing but a slight induration at the point mentioned indicated any tendency to its recurrence. This chronic form, I think, is not very uncommon. I believe, also, that chronic induration in the spaces occupied by the pelvic areolar tissue, caused by fibrinous infiltration, not unfrequently presents itself as the effect of acute perimetritis, producing many distressing symptoms, and rendering the patient liable to a recurrence of acute attacks. The extent of the inflammation and tumefaction is governed somewhat by the condition of the patient. If she be in the puerperal state, the inflammatory excitement is likely to be greater, the swelling more extensive, and the suffering more severe, than if this condition is not present. Pregnancy increases the intensity of the disease beyond what it is in the unimpregnated condition; the fever runs higher, and the extent of the inflammation is greater. The same will be the case after abortions. The mildest form of perimetritis is that which occurs in the unimpregnated female.

When pus is formed, it finds its way out through several different channels. First, and most frequently, through the vagina; the wall of the abscess nearest the vagina ulcerates through into this canal, and the pus escapes, first in small quantities, and finally freely, until the whole is evacuated; a number of days, and even weeks, may elapse before the discharge ceases and the cavity is filled up. The escape through the vagina is not only the most common, but this is the most favorable outlet, as the opening is generally pretty free and permanent. Second, in frequency, as the medium of discharge is the rectum; the pus makes its way into this intestine generally at the upper end of the septum between it and the vagina. The discharge is comparatively slow and unsatisfactory, appearing with the stools in small quantities, and continuing for a length of time. The opening into the bowels is almost, if not invariably, valvular and tortuous, permitting the escape with difficulty. If there does not occur a second opening into the vagina, the abscess will generate pus almost as fast as discharged, and we may expect times of partial relief and exacerbation for months and even years. I am acquainted with an instance in which the patient has not been entirely free from suffering from this cause for the last six years, and a number of times has been prostrated for weeks. But few days pass without the patient observing matter in the fecal evacuations. The pus makes its way at other times through the inguinal regions; sometimes it points in one of the labia, or burrows through the gluteal region. It also perforates the uterus or bladder, and follows the channels leading from them outwardly. When the pus finds its way into any of these hollow organs, it causes severe irritation in them and efforts at expulsion. Dysuria, dysentery, and vaginitis are generally caused by it to a moderate degree, but sometimes the suffering from this cause in these organs is very great. But another mode of escape from the cavity of the abscess is into the peritoneal sac. This is comparatively infrequent, fortunately, but invariably fatal. I believe no instance is on record to contradict this statement. I have been unfortunate enough to be connected with two cases in which this untoward circumstance occurred.

One of the patients was attacked in the puerperal state, and, after suffering for eight weeks with the inflammation of the tissues around the uterus, acute general peritonitis terminated her life in about thirty-six hours from the time it commenced. Upon examining the abdominal cavity, an opening was found near the left sacro-iliac junction, which communicated with the interior of the abscess, and several ounces of pus was in the cavity of the peritoneum, that had made its way through this opening. The usual lesions of extensive and acute peritonitis gave evidence of the cause of death. The other case was in a sterile married woman, about twenty-five years of age, who had been treated three weeks for typhoid fever. Dissection revealed a large pelvic abscess, with recent rupture into the peritoneal cavity, and extensive peritoneal lesions. This overwhelming peritoneal inflammation lasted only about eighteen hours before the death of the patient. When the peritoneal symptom supervened, it was regarded as the result of the intestinal ulceration which sometimes so suddenly terminates typhoid fever.

Causes.

Perimetritis occurs as a sequel to abortions, and labor at full term, and there is but little doubt but that these two conditions sometimes predispose to the disease. The menstrual congestion seems to do the same thing. Any circumstance that fills the pelvis with blood in active congestion may so predispose to it. Cold suddenly applied to the surface or to the feet and legs may excite the already congested parts into a state of inflammation. Much exercise of the limbs in walking or standing on them for a long time, when the pelvic vessels are already distended and excited, has, on some occasions, seemed to me to awaken inflammation. The incautious use of strong caustics to the cervix uteri may give rise to it. I think I saw a case in which perimetritis was brought about by severe exercise in walking immediately after the use of caustic potassa. Excessive venereal indulgence predisposes to this inflammation, if it does not produce it alone.*

Symptoms.

The patient is attacked suddenly, usually with pain in the pelvis, hypogastrium, or iliac regions, which radiates to the sacrum, loins, and abdomen. Sometimes it passes down one extremity, or there is pain in both legs. The pain, generally at first aching and moderate, may become very severe, and darting or cramping in character. In the beginning, or after the inflammation has lasted a little while, there is pain or difficulty in urinating; by pressing upon the inflamed parts, the passage of fæces through the rectum is painful. The patient usually experiences a sense of weight about the perinæum, and dragging in the loins and hips. All the pains are much aggravated by motion, or assuming and continuing in the erect posture. Pressure over the epigastric and inguinal portions of the abdomen increases the pain and suffering.

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* See Chapter XX for other cause.

At the commencement of the pain the patient is attacked with rigors of greater or less severity. The chilliness may be slight, but often it amounts to severe shaking and trembling; reaction proportionate to the intensity of the chill succeeds; the head aches, the limbs are pained, the skin is hot and dry, and the tongue coated, and the mouth dry and parched. These symptoms may come on very suddenly, and the case be well marked in a few hours from the time they commence, or so moderately and gradually as to be several days in assuming prominence. In puerperal patients they occur generally several days after confinement, and seem to be induced by undue exertion or exposure. In such cases the symptoms are more intense than in the non-puerperal cases. The pulse is rapid, the nervous system much disturbed, the heat great, and often there is delirium. The high febrile excitement is attended with severe pain, extending in various directions. Tumefaction and tenderness over the lower parts of the abdomen indicate a local peritoneal inflammation in many of the more severe instances, although this is not always the case. Some of these puerperal cases so closely resemble cases of metroperitonitis—if they are not so indeed—that the cases are regarded as attacks of puerperal fever. So intense are the symptoms as apparently to jeopardize the life of the patient immediately by the gravity of the general pelvic and abdominal inflammation. And when the tumefaction and tenderness of the abdomen subside, the febrile reaction is moderated or becomes more paroxysmal, we find a hard tumor generally on one side dipping down into the pelvis and extending sometimes to the ribs and across to the umbilicus; or it may be developed in the mesial portion of the abdomen and pelvis, extending upward to a greater or less degree. Tumors of this kind are tender, and may be detected in the pelvis by a vaginal examination. They do not always suppurate, but generally disappear by absorption. At other times they produce copious quantities of pus. This inflammation sometimes dissects up the peritoneum over the osseous, iliac, and lumbar muscles, to a great extent, dissolving out the areolar tissue in a large space. The distension and tenderness are quite frequently confined to one side, showing the point of greatest intensity of the disease, but we often find them extending entirely across, and sometimes considerably up the abdomen. These symptoms appertain to the first stage, and last for from four or five days to two weeks, and in rare cases longer, when they are gradually succeeded by those that indicate the suppurative stage. The pain becomes less acute, and changes ordinarily to a burning character, quite as distressing, if not more so than at first. It is worse at night, and prevents the patient from resting. The fever assumes something of a remitting type. It is more intense in the evening and night; toward morning a moisture is observed upon the skin, the heat becomes less, and there is some amelioration in the suffering. After a little longer the paroxysms are very marked; chilliness in the afterpart of the day is succeeded by a very rapid pulse and intense heat of the surface. This fever lasts for six or eight hours, and is resolved by a copious perspiration. These perspirations are accompanied with great languor and depression. The patient is debilitated and much worn by the continuance of the symptoms. At length, after days of this exhausting, suppurative fever, the pus makes its way through the walls of the abscess, and is discharged through some of the outlets mentioned above. If the evacuation is free, and the discharge considerable, the relief is very great indeed, the fever subsides, the perspiration ceases, the spirits are good, the appetite becomes excellent; in fact the change in the patient is very great and gratifying. Convalescence is now established, and in a few days all the serious and distressing symptoms vanish. If the discharge is not free, and but a small quantity of the matter escapes, although there is relief, it is not so complete. The patient is temporarily better, but not convalescent. The opening is not sufficient, the pus continues to increase and imperfectly discharge, and fluctuations in the intensity of suffering continue to inspire hope and cause depression, until a freer opening occurs in the same place, or another one allows the pus to escape more freely.

This description is intended to apply to cases of considerable intensity in the puerperal or non-puerperal patient. But the degrees of intensity are very different in different instances. Sometimes the symptoms are so slight as to scarcely attract attention, until the discharge begins to make its appearance. At other times there is distressing fever, but the local symptoms are so poorly marked that the case is misapprehended. I have known the fever to last for three or four weeks, ending in hectic, with its exhausting accompaniments, before the true nature of the case was discovered.

An example of the occasional insidiousness of the non-puerperal form of this affection is exhibited in the following case:

Mrs. A——, aged twenty-four, married two months, has suffered for the last four years with moderate dysmenorrhœa, and occasional leucorrhœa. Sexual intercourse has given her much pain from the first since her marriage; after three weeks the pain in the coitus became intolerable. At this time she had severe pain in the back and pelvic region constantly, but not so severe as to prevent her being about in the attention to domestic duties and taking a short trip by rail with her husband. She had some very slight febrile reaction, with sense of chilling, for about twenty days, when the paroxysms assumed something of a hectic character, lasting from three o'clock until seven or eight P.M., terminating with copious diaphoresis. A little later a very severe pain in the hypogastric region was developed, attended with frequent efforts at urination. In about four days from the supervention of this pain she began to pass pus in large quantities in the urine, together with marked quantities ot blood. Upon making examination at this time the pelvis on the right side and front portion was filled by a tumefaction very tender to the touch, which had crowded the uterus back upon the rectum and down so that the os was in contact with the perinæum. These symptoms and the examination fully declared it a case of cellulitis.

Diagnosis.

Although the symptoms, in most cases, are severe and sufficiently prominent, they are not often distinctive. Several other affections resemble it in many symptoms. Hence, the only way to arrive at correct diagnosis is by physical examinations. The finger will be the only instrument necessary. It is cruel to use the speculum, while it affords us no aid in the vast majority of cases. I should not think it necessary to caution the reader against the use of this instrument if I had not seen it resorted to more than once, to the great torture of the patient. In making examinations for this kind of case, the patient should be so placed that we may use both hands if necessary. When one or two fingers are introduced into the vagina, they will detect unusual tumidity in the pelvis. Sometimes this tumidity extends to the bottom of the pelvis on one side, and occasionally apparently fills up the whole lower part of the pelvic cavity; at other times the tumidity is circumscribed and confined to one side high up, or before the uterus. The tumefied parts are generally hard, and very tender to the touch, so that a small amount of pressure causes great suffering; the uterine neck is almost always pushed to one side, backward, upward, or downward; the vagina is generally hot and dry, and all the parts sensitive. If we place one hand above the pelvis while the fingers of the other are in the vagina, we will have a consciousness of a tumor between the fingers of the two hands.

It is not always the case that any tumidity can be felt above the superior strait, but generally there is tumefaction in one iliac region or sometimes in both. The tumefaction may extend much above these regions, high up into the abdominal cavity, though not often. If the tumefaction is considerable, the uterus is firmly fixed in its place, but when less, this is not the case. In childbed patients we may distinguish cellulitis from peritonitis by digital examination per vaginam. There is not the hard tumefaction in the pelvis in the last as in the first. Tenderness and general distension of the abdomen are greater in peritonitis; the pulse is more rapid and is peculiar. These may and probably are often combined in puerperal fever, when the diagnosis is of less importance than when they are separate affections. The general peritoneal inflammation supervenes after delivery much earlier—generally on the second day—than any of the localized inflammations do. Cellulitis is more likely to attack the patient when or after she begins to make exertion, or is exposed to cold several days, six to ten, and even more after delivery. (See Pelvic peritonitis.)

From acute metritis in the puerperal or non-puerperal state, it may be distinguished by examination with the finger. There is not much difference in the mode of attack and history between acute metritis and perimetritis; but by a careful survey of the pelvic organs, we may separate the inflamed from the sound parts. In metritis the uterus is generally and symmetrically enlarged, and extends lower down in the pelvis, and if touched at any point is tender; in cellulitis this organ is not generally enlarged, and if touched anywhere in such manner as not to press it against or move it on the side where the inflammation exists, is not the subject of painful impressions. The tenderness in cellulitis is generally to one side of the uterus, close to the walls of the pelvis. If the inflammation is in the bladder, we may easily ascertain this fact, by pressing this organ between the fingers in the vagina and those above the symphysis pubis. From metatithmenia it is distinguishable by the tenderness and firmness of the tumor, the febrile symptoms, and the history of the two conditions; cellulitis being previously inflammatory, while metatithmenia, when inflammatory at all, becomes so some time after the commencement of the symptoms. The bloody tumor may be handled without much pain, is soft and yielding, and commences at the time of menstruating with sharp pain likened often to severe colic, without chill and fever at the beginning; sometimes with collapse more or less intense. Carcinoma filling up the lateral parts of the pelvis, is sometimes mistaken for cellulitis, but more often the latter is mistaken for the former. Carcinoma is insidious in its incipiency. It has made great advance before symptoms indicate its existence, while cellulitis is heralded by inflammatory symptoms from the start. The hardness of carcinoma is greater, the tumidity more irregular and devoid of tenderness; it is not hot as in inflammation. The discharge from carcinoma when it occurs is cadaverous in odor, thin and ichorous in character. In cellulitis the discharge is pus, and if it smells at all, the odor is faintly fecal. I have noticed this last feature in several instances of perimetritis, when the evacuation of the pus was free and copious through the vagina.

The diagnosis from chronic metritis is not always easy. When cellulitis is chronic, it causes many of the symptoms which we observe to be present in chronic metritis. It will require a careful consideration of the symptoms and history of the case, with physical examination.

Chronic cellulitis ordinarily results from an acute attack, that was accompanied with a discharge of pus more or less copious, and paroxysms of less intensity have succeeded, growing more mild, until the symptoms become obscure. Paroxysmal discharge of pus is a common symptom of chronic cellulitis. Upon a thorough and careful examination of the pelvic cavity, we may find some small spot, not in contact with the uterus, but by the side of it ordinarily, that is hard and tender to the touch. In chronic metritis there is not always tenderness.

Prognosis.

This is generally favorable. There is probably more danger in attacks during the puerperal condition, or after miscarriage, than in unimpregnated patients, although the very la [illegible]
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neous origin, and constitute only a part of the whole puerperal fever. I do not think there is much difference in the fatality of uncomplicated cases occurring under these diverse circumstances. When cellulitis proves fatal, it is generally in one of three ways: 1st. By exhaustion, caused by excessive and long-continued febrile excitement, symptomatic of extensive inflammation. 2d. The exhausting effects of hectic fever, diarrhœa, diaphoresis, and want of nourishment. 3d. Severe complications, arising during the progress, as peritonitis, by extension of inflammation; or the more rapidly fatal form of peritonitis, caused by effusion of pus in its cavity. I have seen three fatal cases. Two of them resulted from rupture of the abscess, and discharge of the pus into the peritoneal cavity. One of these was puerperal, and death occurred ten weeks after confinement; the other non-puerperal, and ended in eight weeks from the attack. The one which proved fatal from exhausting hectic, without evacuation of the pus, terminated in sixty days from the commencement.

A great many cases terminate in the chronic form. The cause of this sort of termination is often incomplete evacuation of the pus, and, as a consequence, imperfect obliteration of the cavity of the abscess. The pus accumulates from time to time, and fresh eruptions, attended with a greater or less exacerbation of the symptoms, every few weeks or months, occur as this result. Or the external opening, wherever it may be, does not close, and there is a constant discharge of greater or less quantity, keeping up a kind of fistulous canal, leading generally some distance to the main seat of the difficulty. Or in still another sort of cases, the pus seems to be entirely evacuated, and the cavity obliterated, and there is nothing left but a small point of indurated tissue, which is the nucleus of inflammatory action under certain circumstances, as pregnancy, unusual excitement of the sexual organs, from other reasons, etc.

Local Peritonitis.

Post-mortem examinations, as shown especially by Goupel, demonstrate the fact that we may have peritonitis confined to the pelvis and its vicinity. Observing practitioners of long experience must have met with instances which, without any great difficulty, could be classed under this head, and I have no doubt of the practicability of generally distin[illegible] those of cellulitis, with which they are [illegible]

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Post-mortem examinations are not always conclusive as indicating a condition which had existed during the entire course of the disease; for while in the more acute stages there may have been coexisting inflammation of the peritoneum and cellular tissue, the inflammatory action in the cellular tissue may have subsided, and the peritonitis alone remain to be discovered at the autopsy, and *vice versa.*

This would mislead the pathologist who depended upon the post-mortem appearances entirely.

When the peritoneum is primarily attacked, and the inflammation is confined to this membrane, it becomes injected with blood, dry, and rough, and in the motion to which the viscera are subjected during respiration, etc., the surfaces rub together and cause sharp stabbing pain. Upon the subsidence of this stage of the inflammation, an effusion of serum, rich in fibrin, takes place, which gravitates to the most dependent part, and usually accumulates in the cul-de-sac behind the uterus, but does not displace the organ to any marked degree. The effused fluid soon coagulates, and the liquid portion of the serum is removed by absorption, and there is a solid mass of fibrin left in the retrouterine pouch.

If the uterus happens to be retroverted at the time of the coagulation, it is fixed in that position until absorption liberates it, or during the life of the patient.

The movements of the pelvic organs—and by the way these organs are always in motion, in unison with the respiratory movements, and as an effect of the movements of the body—sometimes modify the form of the coagulum, drawing it out into bands, which stretch from one surface to the other.

After this serous effusion, the inflammation may subside and leave the patient comfortable, but the subject of a fixed uterus. In some cases, however, the absorption is rapid, and the organ is left entirely free in a short time.

Should the inflammation be more intense, the epithelium of the membrane is loosened and falls off, leaving a pyogenic surface, from which pus is produced in greater or less quantities when there is a sero-purulent effusion confined in an irregular fibrinous capsule.

If the pus is considerable in quantity, an abscess is the result, which finds its way out in a manner similar to the evacuation of pus as a result of cellulitis.

In the non-puerperal moderate cases of local peritonitis the serous and purulent accumulations are confined to the pelvic cavity, but in the puerperal or the more intense forms of non-puerperal inflammations, these accumulations reach higher than the brim, and are often found in indurated patches in both iliac regions or over the hypogastrium. When these accumulations are round, or shaped like tumors, they may be mistaken for ovarian or uterine neoplasms.

The Fallopian tubes are sometimes constricted by these fibrinous bands, and a portion of their cavity isolated, in which liquid accumulations collect, and give rise to Fallopian tumors,—hydrosalpinx.

Bennett and Goupel in some instances found the ovaries involved in the inflammation, and either destroyed by suppuration or left in a state of chronic inflammation.

Causes.

The puerperal condition at term, or after abortion, is a very frequent, if not the most frequent, cause of local peritonitis.

The action of cold upon the woman, when the pelvic organs are in a state of intense congestion, just prior or at the time of menstruation, is also a prolific cause.

Gonorrhœal inflammation, by making its way through the cavity of the uterus and along the Fallopian tubes out upon the peritoneum, is, by common consent, taken to be another one of the causes; but inflammation may, by contiguity, also extend from the uterus to the peritoneal membrane. This is the case, doubtless, in the puerperal condition, after the violence done to the uterus by severe labor or abortion, and in non-puerperal cases where strong applications have been made to it, operations, etc.

Direct violence to the retrouterine portion of the peritoneum is often done by the injudicious introduction of foreign substances by the patient herself, excessive coition, and by rude and ill-directed attempts to replace the uterus by instruments.

Symptoms.

Pain in the pelvis and lower abdomen is one of the most common and distressing symptoms, and this pain is generally characteristic. It is sharp, stabbing, and paroxysmal, or exacerbating. The sharp, stabbing, exacerbating pain is accounted for, as before said, by the friction of the two surfaces of the peritoneum, rendered dry and rough by the inflammation. In cause and character the pain resembles that of the early stages of pleuritis.

While pain is one of the most constant symptoms, cases do occur in which there is very little pain, probably because early effusion, or some other condition, prevents the friction. Another consideration, which will enable us to account for the absence of pain, is the great difference in the susceptibility of different persons. However we may explain it, we know from observation that pain is sometimes almost entirely absent, and then the disease may be mistaken for some other affection.

In the commencement there is a sharp febrile reaction, with its attendant phenomena, as quick pulse, headache, delirium, nervous excitement, and derangement of the secretory functions, etc.

The intensity of the excitement will depend very greatly upon the suddenness of the attack and extent of the tissue affected by the inflammation; greater when sudden and extensive, and less when the progress of the inflammation in the first stage is slow and the parts involved are small in extent. The febrile reaction is usually high at first, and very much moderated as the effusion occurs.

The character of both pain and febrile reaction are greatly modified by the conditions which give rise to suppuration. As suppuration is established the sharp pain gives way to a sense of tension, weight, and heat, while the febrile movement becomes more remittent or paroxysmal. Debility, copious perspiration, and frequent chills make up the items indicative of suppuration.

These symptoms are partially or completely relieved by opening the pyogenic cavity and permitting the pus to be discharged. The points where the pus flows, as in cellulitis, are the upper part of the vagina, rectum, the bladder, inguinal or femoral canal, some place in the abdominal wall, the gluteal region, or one of the greater lips of the vaginal orifice, and rarely the peritoneal cavity.

If suppuration does not occur, and the case terminates in convalescence without it, the symptoms gradually subside.

Upon examining the lower abdominal region we will generally find tenderness upon pressure, and often more or less tumefaction, with or without tympanitis. The uterus, if displaced, is pressed forward, but it often occupies its normal position. In the first stage there is generally not much tumefaction in the pelvis felt through the vagina, but great tenderness behind and by the sides of the uterus. When the fingers are pressed well upward in the stage of effusion there is tumefaction behind the uterus, and sometimes in the iliac and hypogastric regions.

Diagnosis.

When free from complications,—which, I must say, judging from my own observations, I believe to be less frequent than the converse,—I do not see why there should be any great difficulty in differentiating local peritonitis. The affection with which it is more likely to be confounded than any other is cellulitis. The pain in the first stage of cellulitis is more steady; is dull or aching, instead of stabbing or lancinating; and the tenderness, although considerable, is not so great as in pelvic peritonitis. In the second stage the pain in the two affections does not differ much, if at all. The tumefaction is not in the same locality; in cellulitis it is by the side or in front of the uterus, while in local peritonitis it is behind that organ.

If the peritonitis extends above the pelvis, which it often does, it may be in one or both iliac cavities, or extend across the lower part of the abdomen. When the effusion in peritonitis is above the pelvis in the centre percussion will elicit marked resonance, because the intestines are contained in the mass, and this resonance will enable us to distinguish it from a tumor.

The history, symptoms, and physical signs enable us to decide between local peritonitis and retrouterine hæmatocele. In peritonitis the history is one of inflammation, well marked in the beginning and throughout its whole progress, while that of hæmatocele does not indicate inflammation in the beginning of the attack, and seldom in any of its later stages. In local peritonitis metrorrhagia is not a symptom; in hæmatocele it is. Tenderness is a permanent feature in peritonitis, while it is very slight if it is present in hæmatocele. This remark applies when pressure is made above the symphysis or in the vagina. The pelvic tumors in both disorders is ordinarily retrouterine, and not dissimilar in shape; but in the earlier periods the hæmatocele is uniformly soft, while the inflammatory effusion is harder. The hæmatocele displaces the uterus more than the inflammatory product. The tumors caused by both may and often do extend above the pelvic brim. The bloody tumor is generally central, and forms a somewhat level line across the lower abdomen, while the inflammatory tumor is usually irregular and hard, and is often confined to one iliac region.

In retrouterine pregnancy the absence of acute inflammatory symptoms, unless in exceptional cases, and the presence of the evidences of pregnancy, are strong differentiating circumstances, and will generally lead to definite conclusions. In extrauterine pregnancy we can watch the case for a sufficient length of time, and the growth of the tumor will do much to solve the difficulty.

The pelvic tumors formed by cancer differ from those of local peritonitis in the facts that they have no inflammatory history, in their great hardness, and irregularity of growth. Fibrous tumors have no inflammatory history, are more or less movable, more dense and regular in outline. The fibrous tumor is generally accompanied by metrorrhagia, while the inflammation is not often attended by that symptom.

Prognosis.

When peritonitis is confined to the pelvis and its vicinity it is rarely fatal. One of the dangers connected with it is the probability of its extension to the whole or greater part of the abdominal peritoneum. This is much more likely to occur in puerperal cases. The fatal termination is sometimes the result of exhaustion induced by protracted suppuration and febrile excitement.

Acute pelvic peritonitis has a strong tendency to become chronic by the continuance of the inflammation in a subdued form. In this condition, by exposure, overexertion, sexual excitement, or injudicious treatment, it may become intensified to an acute degree. When pelvic peritonitis has resulted in collections of pus, in portions where the evacuation of the fluid is imperfect, the inflammation may be protracted to an indefinite time. Fortunately, however, in the great majority of cases it passes into convalescence, which is usually slow, but complete.

Before giving the treatment of local peritonitis I must again say that this disease is so frequently complicated by cellulitis that its occurrence in the simple form is not common. I believe, also, that simple cellulitis is as rare as uncomplicated local peritonitis. But it is very often the case that the cellulitis is comparatively intense, while the peritonitis is not severe, when the symptoms and physical signs are those of cellulitis; and again the peritonitis may assume a grave form, while the cellulitis exists in a very moderate degree, when the symptoms of peritonitis will predominate. The contiguity of the tissue implicated in these two affections, and the identity of vascular and nervous supply, are facts that hardly admit of any other conclusion than that inflammation does not generally invade either of them and leave the other unaffected.

Treatment of Perimetritis.

From what I have seen and had to do with these affections, I am led to prescribe in a general way the same treatment for both of them.

In the early days of an attack of peritonitis the object of treatment should be to abort the inflammation, and, when this is impracticable, to limit its extent. We can seldom accomplish the first of these objects unless we see the patient and recognize the nature of the attack in the very beginning. It is not possible to declare just how many hours or days must elapse when we are no longer justified in trying to arrest the disease, for this will greatly depend upon the intensity, but we may always find something in the conditions to guide us. Before any considerable amount of effusion and tumefaction has taken place we may hope to check the progress of the inflammation, even if this is two or three days after the commencement, or, when great swelling has occurred, we may still expect to limit its extent. The symptoms indicating the measures necessary to interrupt the inflammation are great pain, accompanied by tumefaction. These call for as energetic antiphlogistic treatment as the strength of the patient will bear. If she is robust, from twelve to twenty leeches on the hypogastrium should be applied at once, and after they have fallen off the hæmorrhage must be encouraged by poultices or fomentations until, if possible, the hardness of the pulse is affected. At the same time a large dose of opium, or some of its preparations, should be administered, and repeated in such quantities as to keep the pain in complete subjection, and not merely given from time to time when the pain returns.

If the patient is not robust we cannot resort to bloodletting, but we must always administer the opium in this way. As secondary measures the arterial sedatives may follow the depletion, when that is deemed advisable, or be our main reliance if we do not consider it best to deplete. Veratrum viride has gained such a reputation that it would naturally suggest itself as the most efficient of these. It may be given in doses sufficient to control the circulation, and keep it under control for the first five or six days of severe attacks. Poultices or fomentations to the hypogastric region should be one of the features of the treatment for the whole of the more active stages of the disease. They will often give marked relief. Large injections of very warm water, the patient lying on her back, should also be employed. An apparatus that will permit the water to run off without wetting the clothing will be indispensable to the proper management of the injections. This kind of treatment will sometimes check the force of the attack in a very short time by arresting or limiting the extent of the inflammation, and thus save the patient from the protracted suffering which neglect of energetic treatment is sure to entail.

After the effusion has taken place, and before the period of suppuration has arrived, alteratives, such as mercury and iodide of potassium, are very important remedies. The former may be given in small and frequently repeated doses, until the slightest possible indication of its general effects are noticed, when it should be displaced by the iodide. This is the period when decided saline laxatives are useful and advisable.

When the symptoms indicate the commencement of suppuration we can no longer continue all of the foregoing treatment.

The opiates may now be given when the pain requires it. The regimen and medication should be changed to quinine in liberal doses, two to four grains or more, as often as necessary, to keep up its influence, and supporting food in as large quantities and such quality as the stomach and rectum will bear.

Unfortunately we are often called upon to treat patients who have already passed the time when any other than the supporting and anodyne treatment would be entirely out of consideration, because many of these patients have been too greatly reduced by preceding influences to permit of any other than anodyne and supporting treatment from the beginning. These are the unfortunates who linger for weeks, and sometimes for months, in spite of anything we can do for them.

During the progress of perimetritis there is a time when counter-irritation will be of great service. After the more acute symptoms have subsided, and effusion is evident, a blister applied over the iliac region, where the pain is greatest, or over the hypogastrium, if that is the location of the most pain, will be required.

The blister applied at this time will often relieve the deepseated pain, prevent the effusion from becoming purulent, and excite the absorbents to remove it.

Later in the disease tincture of iodine will go far toward accomplishing the same objects.

A question arises at the suppurative stage of the affection which must be decided after a careful survey of the whole case, viz., should we evacuate the pus, or should this process be wholly left to nature? As one of the disastrous terminations is a rupture in the peritoneal cavity, as nature often selects very circuitous and unsatisfactory viaducts, as the rectum, bladder, etc., and as a consequence of this last circumstance the recovery is very much protracted, I think we should, when practicable, furnish the pus an outlet of our own choosing, and as early as can conveniently be done. Soon as evidences of suppuration begin to be manifested through the general symptoms, we tumidity extends to the bottom of the pelvis on one side, and occasionally apparently fills up the whole lower part of the pelvic cavity; at other times the tumidity is circumscribed and confined to one side high up, or before the uterus. The tumefied parts are generally hard, and very tender to the touch, so that a small amount of pressure causes great suffering; the uterine neck is almost always pushed to one side, backward, upward, or downward; the vagina is generally hot and dry, and all the parts sensitive. If we place one hand above the pelvis while the fingers of the other are in the vagina, we will have a consciousness of a tumor between the fingers of the two hands.

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Prognosis.

This is generally favorable. There is probably more danger in attacks during the puerperal condition, or after miscarriage, than in unimpregnated patients, although the very large majority of these cases terminate favorably. Of course I leave out of this consideration such instances as are attended by general peritonitis of simultaneous origin, and constitute only a part of the whole puerperal fever. I do not think there is much difference in the fatality of uncomplicated cases occurring under these diverse circumstances. When cellulitis proves fatal, it is generally in one of three ways: 1st. By exhaustion, caused by excessive and long-continued febrile excitement, symptomatic of extensive inflammation. 2d. The exhausting effects of hectic fever, diarrhœa, diaphoresis, and want of nourishment. 3d. Severe complications, arising during the progress, as peritonitis, by extension of inflammation; or the more rapidly fatal form of peritonitis, caused by effusion of pus in its cavity. I have seen three fatal cases. Two of them resulted from rupture of the abscess, and discharge of the pus into the peritoneal cavity. One of these was puerperal, and death occurred ten weeks after confinement; the other non-puerperal, and ended in eight weeks from the attack. The one which proved fatal from exhausting hectic, without evacuation of the pus, terminated in sixty days from the commencement.

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Pelvic peritonitis is seldom primary and simple. More frequently it is primary, and leads to cellulitis as a complication; and in other tenderness, pain, and long-continued suppuration. The pyogenic cavity is perpetuated by the imperfect discharge of pus. While the pus is being constantly discharged, the sac whence it comes is not entirely emptied, and there is enough pus generated to keep up a perpetual drain. The manner in which the original opening was affected is almost always the cause of this imperfect evacuation of the abscess. The canal or conduit leading from the cavity is tortuous, and penetrates the muscular fibres of the rectum or bladder diagonally, so as to form a valvular opening. The pus after having travelled along between the different muscular layers of the walls of one of these organs, makes an opening that is closed with every contraction and opened with each relaxation of the fibres. Still another unfortunate method of perforating the intestinal tube or bladder is when the level of the sac is below the opening. In all of these ways the complete evacuation may be prevented and the discharge protracted for years. We meet with another form of perimetritis in which the abscess seems to have been cured after complete evacuation. The subsidence of the symptoms is so complete as to leave the patient in the enjoyment of fair health. After a time, of greater or less duration, sometimes a few weeks only, at others several months, the symptoms recur in a less severe degree than in the acute form, and after a duration of several days or weeks a discharge of pus is again succeeded by relief.

These attacks are repeated an indefinite number of times, and if the patient recovers it is after a number of months or years.

The suffering is sometimes very great and followed by large discharges. More frequently, however, the pain is not so excruciating and the discharge of pus is small.

Again, other cases are met with in which the progress of the inflammation from the beginning is very slow, and not attended with very severe pain, but continues until quite a large amount of pus is formed, which remains in the sac, with very little tendency to ulcerate through the tissue. Whether the pus in some of these cases would ever be discharged by spontaneous processes is a matter of great uncertainty. I have seen cases where from the history I felt assured that this indolent abscess had existed for years.

I saw a case in this city with Dr. T. D. Fitch, that he informed me had been in the condition it was when I saw it for three years. That he had seen it, discovered pus, and advised its evacuation, as long as that, before I was called. I have seen others equally protracted in my own practice and in consultation.

Some cases are met with, the history of which includes a number of recurring acute or subacute non-suppurating attacks, weeks or months apart, that finally culminate in suppuration. Patients suffering from this form have an attack of fever, with pain in the pelvis, pains running down the limbs, tenderness, and perhaps very slight tumefaction of the hypogastric region. This passes for "inflammation of the bowels." The patient more or less completely recovers from the attack, and after a time is again prostrated with similar but less pronounced symptoms, these run a course of four or six weeks and the patient again recovers. This time the fever may be called typhoid or bilious fever; in a subsequent attack suppuration reveals the true character of the disease. The explanation of all these symptoms is that the patient had several attacks of moderate perimetritis, that for want of proper physical examination were misunderstood and called by different names.

All gynæcologists engaged in extensive practice frequently meet with such cases.

But all cases, nor even a large proportion of them, do not end in suppuration. The exudate in these cases does not break down, but continues hard, and is formed in masses of greater or less size in the broad ligament, attached to the side of the uterus, or between the uterus and bladder. Or where the disease is in the peritoneum the exudation may be above the brim of the pelvis in the iliac region. These deposits of fibrin are often mistaken for tumors. Not unfrequently a large part of one side of the pelvis is filled with a hard immovable mass of plastic effusion, and the uterus misplaced and fixed in its malposition. In other instances the accumulation is small and does not affect the position or mobility of that organ.

Instead of the localized effusions here described, sometimes there is a diffuse moderate infiltration of fibrin in the cellular tissue that causes thickening of the ligament. The parts are less elastic than usual, the uterus less movable yet not fixed.

This condition is the one most frequently present when the uterus is said to be "bound down," so that it cannot be reposited and retained in position without causing great suffering or awakening acute inflammation.

There is also a very moderate degree of chronic inflammation—hyperæmia with sensitiveness—which invades and remains in the perimetric tissue without causing effusion or any considerable degree of tumefaction.

Whether this degree or form of disease is one introductory or preparatory to the more grave acute grade, or one that may last indefinitely, without any great variation in intensity, is not certain. It is probably the condition to which the term—so frequently used—"latent inflammation" is applied, because under certain favoring circumstances the vascular and nervous action is developed into the acute form.

I have no doubt that this low degree of inflammation may exist a long time, and perhaps indefinitely, in the absence of causes exciting it to a higher grade of action.

Symptoms and Diagnosis.

Generally the symptoms of chronic perimetritis are not distinctive, and arrange themselves under the general head of "Uterine Symptoms." In those cases in which pus is formed the symptoms become more marked, and we may not be at a loss to understand them; but even in some of these the symptoms are not decisive. We must, for the most part, therefore, depend upon physical examination. The history of those cases of frequently recurring paroxysms of pelvic inflammation, which for many months, or even years, precede suppuration, will often indicate pretty clearly the character of the disease with which we have to deal. Yet, without an examination of the pelvic organs, even these cannot be diagnosed until they have about run their course.

There is generally one element which, to one whose attention is attracted in that direction, will be found to be almost always present, viz., fever in a more or less marked degree. In all but the indolent abscess, and the slighter degree of its form, in which there is no exudation, this symptom will pretty uniformly present itself.

Physical examination will uniformly develop sensitiveness. It will often happen that, during the examination, the tenderness will be so slight as not to elicit complaint from the patient; but, after the manipulation is ended, there will be left aching and a sense of tenderness. Sometimes the reaction will be quite severe and last for hours, or even awaken *an acute attack*. This subsequent tenderness, however slight, is a symptom of much significance, and should teach caution in future examinations.

Another important sign (yet not so important as the last) is certain positions of the uterus. When the cervix is drawn strongly to one side, and especially if it is fixed in that position, it indicates an irregularity in the length of the broad ligament. The ligament of the side toward which the traction is noticed is shortened, and, while not invariably so, the shortening is frequently owing to previous or present inflammation in the connective tissue of the ligament. If associated with tenderness this condition ought to complete the diagnosis. As has been pointed out by Dr. Emmett, this condition is often present in cases of laceration of the cervix.

Bimanual examination of the sides of the pelvis will generally enable us to detect even a small amount of fibrinous deposits. They may generally be diagnosed from tumors by their tenderness, fixedness, and locality. In most cases they will be fixed to the pelvic walls, especially when situated, as most of them are, in the connective tissue of the broad ligament. Sometimes, however, they are developed at the side of the uterus, and adhere firmly to it. In such cases they move *with* the uterus, and cannot be made to move *upon* that organ. These are more likely to be mistaken for subserous fibrous tumors. The history will do something toward clearing up the diagnosis. There will always be a history of inflammation. The menses are not so likely to be profuse as in the case of fibrous tumors. Each manipulation will be attended or succeeded by tenderness. When the deposit is extensive the position of the uterus is generally affected by it also. The indurated patches at the brim of the pelvis, left by local peritonitis, are sometimes mistaken for tumors. We should give due weight to the history of inflammation, with which these are connected, and the tenderness that is developed by pressure, and other manipulations. When examining them we will generally find them flat instead of globular, and not movable. But the most remarkable, and, I think, pathognomonic sign, is resonance under percussion. However extensive these indurated masses may be, percussion will elicit intestinal resonance over the whole space occupied by them. The resonance is due to the fact that the effused fibrin surrounds, instead of displaces, the intestine, and in coagulating includes that tube in the indurated mass. These signs are all different from those evinced by an examination of a tumor. The signs of the indolent abscess of the broad ligament are an immovable tumor, which is elastic or fluctuating, and the test is aspiration.

Treatment.

The treatment of these several diverse conditions must necessarily vary. The form in which sensitiveness and hyperæmia are not attended with effusion will require great circumspection in the treatment.

One is continually tempted by local inconvenience to depend too much upon local treatment, whereas I think it is benefited less by local measures than any other form of the disease. It is, in fact, more frequently connected with, if not dependent upon, some dyscrasia (or dysthetica) than upon local conditions, and hence must be treated largely by general measures. One of the most efficacious of these measures is a judicious change of climate and habits. The object in making a change of climate and habits should be to revolutionize the circumstances of the patient. It is astonishing how these patients, who cannot stand upon their feet, on account of the great sensitiveness of the pelvic organs, will improve on a long journey, which, from the symptoms, would seem impracticable. A trip to, and residence in, California has done more to cure some of these patients than could have been done by medicine alone. But much good can be done by medicines, such as will improve the condition of the system. The bowels should be the subject of special care. They will more frequently than otherwise be constipated, and their secretions depraved in quality, as well as scarce in quantity. The mercurials and bitter tonics, if perseveringly administered, will often correct the constipation, improve digestion, and act favorably on the depraved state of the general system.

The sixteenth of a grain of the bichloride of mercury, with a full dose of the compound tincture of cinchona, or the tincture of columbo, three times a day, makes an excellent mixture for such cases. The diet should be full in quantity and nourishing in quality. Exposure to the fresh air and sunshine is also indispensable to restoration. The exercise should not be too much restricted, because confinement always aggravates the general condition, and moderate exercise is not harmful to the local trouble. The special treatment should consist in large injections of tepid water, and extensive but very moderate counter-irritation.

The counter-irritant I rely upon most is the tincture of iodine, diluted with an equal quantity of alcohol. This liniment should be applied over the whole lower part of the abdomen, back, and hips. I believe, however, that the local treatment can often be dispensed with if judicious management of the general health is persevered in and diligently applied.

In the cases in which fibrinous deposits are observed, special treatment is of more importance. And the first thing that I would insist upon is that pessaries and stimulating applications to the uterus should be abjured.

Large hot or tepid water injections and sitz-baths will be of great service. It will sometimes be found that hot-water injections will cause discomfort, while tepid water will be followed by relief, and the effect experienced from them should guide us in our choice.

Concentrated counter-irritants in the inguinal regions will also be found very beneficial. A small seton I believe to be the best form of counter-irritant, and when kept clean and shielded from the friction of the clothing it will give the patient but little inconvenience, and we must not forget the soothing influence of glycerin tampons.

Diligent attention to the general health is of the greatest importance also, and very small doses of mercury, laxative diet, and exposure to pure air in a mild climate will generally suffice. In the suppurative variety, which is but the advanced stage of the latter form, attention to the general health is of paramount importance. When the suppuration is intermitted with intervals of comparative comfort, we may generally interrupt the paroxysm by establishing and keeping up for a considerable period a discharge from the iliac or inguinal region over the seat whence the discharge emanates. I know of no one remedy that does so much good as the seton. It should be larger than in the last variety, and the local irritation kept up for several weeks or even months.

When the suppuration is continuous, in addition to attending to the general health, we should try to establish a more direct outlet. When the discharge is from the rectum we may sometimes pass a bent probe through the opening and bring its point down upon the roof or side of the vagina, and make it a guide to a puncture in that direction. When we cannot improve the direction of the outlet we may sometimes destroy the pyogenic character of the cavity by injections of carbolized water through a flexible catheter, introduced and carried to the bottom of the cavity.

In the case of the indolent abscess all that will generally be found necessary is to draw off the pus by the aspirator. In this variety the lining membrane (or wall) of the cavity has ceased to produce pus, and consequently when the sac is emptied the fluid does not reaccumulate. I have seen several cases thus happily terminated.

CHAPTER XXIV.

DISPLACEMENTS OF THE VAGINA, BLADDER, AND RECTUM.

In every displacement of the uterus the direction of the axis and the calibre of different parts, or the whole of the vaginal canal, are changed from their normal conditions. In procidentia the vagina is in part or wholly inverted. In such cases, however, the changes are complications of the displacements of the uterus, and are described and treated as such.

The more common and yet not entirely independent displacements of the vagina are known as cystocele and rectocele.

Cystocele.

Cystocele is a prolapse of the anterior wall of the vagina, being borne down by a prolapsed bladder, or drawing down that organ with it. The prolapses of the anterior vaginal wall and bladder may also make sufficient traction upon the uterus to cause prolapse of that viscus, and thus be complicated by it without the posterior wall of the vagina being much disturbed. Still another thing may be said in this connection. Sometimes the mucous membrane of the anterior or posterior wall of the vagina may prolapse through the vulva without displacing the fibrous sheath, the bladder, or the rectum.

Rectocele.

When the posterior wall of the vagina protrudes externally it is generally attended with displacement of the anterior wall of the rectum, and sometimes the uterus is drawn down and displaced by traction of the wall of the vagina.

The symptoms of cystocele are dragging sensation or weight in the vagina, with leucorrhœa and burning pain, occasioned by the inflammation from the exposure or friction of the mucous membrane of the vagina, and vesical suffering. In recent cases there is simply frequent desire to micturate and unsatisfactory discharge of the urine.

As the case becomes chronic the incomplete discharge of urine leads to its decomposition, the precipitation of the salts contained in it, and the evolution of ammonia.

The ammonia and salts irritate the mucous membrane of the bladder to a greater or less degree, and in aggravated cases severe inflammation and ulceration occur, attended with discharge of mucus, blood, and fetid gases.

These local results are attended by constitutional disturbances commensurate with their gravity.

The sufferings in rectocele are usually less severe. There is weight, leucorrhœa, and unsatisfactory defecation. The muscular coat of the rectum loses its tone and permits the fæces to collect in a large mass in it, which intrudes into and fills up the vagina.

When an effort is made to expel the excrement it collects in larger quantities and remains in this passive pouch until the patient presses or scoops it out with her fingers.

Diagnosis.

Upon examining the vagina the anterior or posterior prolapse will be readily discovered, and may be isolated by passing the finger into the vagina. If the anterior wall is prolapsed the finger will pass behind the tumor, and in front of the tumor if the posterior wall is the portion affected.

We may demonstrate a cystocele by introducing the catheter. The instrument, instead of passing backward and upward, will go downward and backward, and the point may be felt occupying the tumor. In rectocele, if we introduce the finger into the rectum, it may be turned forward toward the vagina and made to enter the tumor. If the prolapse consists of the mucous membrane alone, the finger or catheter will not pass into the tumor.

Causes.

Loss of substance or tone in the perinæum is one of the most important conditions necessary to prolapse of the vagina. There may be loss of substance in the anterior border of that body from rupture, or loss of firmness from subinvolution, lack of general muscular vigor,—debility,—or senile atrophy.

In old women we not infrequently find all the genital organs in a state of abnormal relaxation from loss of fibrous tissue.

Instead of normal atrophy, in which the parts are condensed, as the fibrous tissue disappears, there is no contraction, and the uterus, vagina, and perinæum are reduced to their membranous structures, incapable of resisting force in any form. Subinvolution of the vagina, bladder, and rectum, on account of the vascularity and laxity attendant upon that condition, permit displacements, which are favored by the weight of these and other pelvic organs.

Retention of the urine and fæces are also important factors in the displacements. They distend and weaken the walls of the viscera until they become incapable of resisting the pressure.

Treatment.

The same general principles govern the treatment of these two conditions.

If the perinæum is deficient, its integrity should be restored by perinæorrhaphy, and this will often be sufficient to effect a cure of either or both.

When there is no loss of perinæum, or the deficiency is slight, we may often cure cystocele by returning and retaining the prolapsed portion in position until the redundancy of tissue is reduced by the contraction and condensation which take place when the distending forces are removed or counteracted.

The instrument which I have found most serviceable in cystocele is Zwanc's pessary. The points upon which it rests are the rami of the ischium, and it presents the flat surface of its expanded wings upward, affording an admirable lodging-place for the redundant tissue. The application of this instrument is not difficult, and when of the right size it very generally relieves the symptoms at once, especially the irritableness of the bladder. It will be necessary for the patient to wear the pessary for many months until the condensation or involution is complete. Like every other pessary, this one should be removed and examined often enough to insure cleanliness and prevent damage to the vagina.

If it causes ulceration it must be removed at once. Sometimes a ring, kept in position by external support, may be made to retain the procident wall quite securely. The practitioner should rely upon the pessary in most instances of this kind as far preferable to other surgical means, except the restoration of the perinæum when deficient.

When a surgical operation is required, the object to be attained by it is to remove a portion of the redundant mucous membrane over the central part and draw the edges together, and thus lessen the calibre of the vagina.

To the inexperienced this operation seems a formidable one, but it is not so, and when attempted the difficulties will rapidly vanish. In the natural condition, the mucous membrane of the vagina is attached to the fibrous sheath by very loose connective tissue. In cystocele the space is much greater, hence, with a tenaculum we can lift the membrane freely away from the vaginal sheath and with the scissors remove it to any extent we desire.

As before remarked, the protrusion in many instances is made up of the mucous membrane alone, when the operation is easy and a complete success.

When the fibrous wall of the vesico-vaginal space yields, and is prolapsed with the mucous membrane, the operation is much more likely to fail, and we will at last be obliged to resort to a support.

Judging from my own observation, I should say that rectocele is hardly curable in any other way than by operation. The perinæum is almost, if not always, deficient, which requires an operation for its restoration. When this is the case, the two may be cured by the same operation. The more protuberant part of the rectocele is at the perinæum, and this portion may be denuded as far as necessary and closed with the perinæum, or a single ligature may be made to surround the part denuded like a puckering string, and the whole may be closed up and drawn down upon the perinæum.

If the perinæum does not require an operation, then a similar operation to that recommended in cystocele may be performed.

Dr. Gillette, of New York, performs an operation for condensing the mucous membrane without removing it, by passing silk ligatures between the membrane and the fibrous sheath and drawing it up over the most protuberant portion. Silver wire sutures are generally used for drawing the edges of the mucous membrane together over the denuded part.

The manipulation will be suggested with sufficient accuracy in what is said about the use of instruments in the operation for vesico-vaginal fistula,—perinæorrhaphy and an examination of the figures.

The after-treatment is of great importance. The patient should be kept quiet in bed and have opium enough to relieve pain, and in cystocele the urine should be evacuated by the catheter often enough to prevent distension. In rectocele the rectal tube must be used to prevent the accumulation of gas, and the bowels moved by saline laxatives every other day. Salines should be used because they liquefy the stools.

CHAPTER XXV.

DISPLACEMENTS OF THE UTERUS.

THE womb may be displaced when not pregnant, when pregnant, parturient, or puerperal.

In the unimpregnated condition the more common forms of displacement are lapse, prolapse, protrusion, retroversion, anteversion, retroflexion, and anteflexion. Another rare form of displacement is upward. This is generally caused by attachment to tumors, with the development of which the uterus is lifted upward. It is also displaced by effusions and tumors forward toward the pubis, and backward toward the sacrum, without change of axis. These latter changes in themselves are of but little importance, and will be corrected by the removal of the tumor or effusion, when that is practicable or necessary.

The natural position of the uterus is not precisely the same in every individual. It is generally situated very near the centre of the pelvis, with the fundus directed a little forward of the axis of the brim, and is, probably, a quarter of an inch below the plane of the superior strait. In the virgin, more frequently than otherwise, there is slight anteflexion. The lower end of the cervix is very little below the level of the arch of the symphysis pubis, with the os turned slightly forward. Very often the fundus is turned in a small degree to one side or the other. This description has reference to the cavity of the pelvis, and not to the line representing the longitudinal axis of the body. The variation of the position of the pelvis in relation to the axis of the body is very great, and this variation will carry the axis of the uterus with it. In the woman who stands erect, with her shoulders thrown well backward, the axis of the uterus is almost horizontal, and nearly at right angles with the perpendicular axis of the body. On the contrary, the woman who stoops or throws the shoulders forward causes the direction of the axis of the body and superior strait of the pelvis to approach the same line.

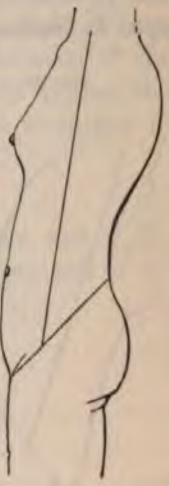
The more nearly the longitudinal axis of the body and the axis of the superior strait correspond, the more the abdominal organs press into the pelvis. In addition to the permanent or fixed relation of the pelvis to the trunk it must be borne in mind that the movements of the body are continually effecting temporary changes in these relations, and that some avocations keep the pelvis flexed upon the trunk from six to ten hours daily.

In considering the natural position of the uterus we should not forget its great mobility—a provision of salutary importance—a circumstance that serves to continually correct its position when the displacing influences are withdrawn.

Natural Uterine Supports.

It is not a very easy matter to determine all the agencies concerned in retaining the uterus in its natural position. From what has been said the reader will infer that I consider the relative position of the axis of the pelvis and body one of the agencies. At the brim of the pelvis the broad and the round ligaments are unmistakably supports to the uterus in keeping the fundus in proper position with reference to the pelvic circle, as well as to prevent its prolapse. The broad ligaments are not strong, but they are elastic, and, while their power to prevent displacement is not very great, they are sufficiently elastic to replace the organ against moderate force. Their perpendicular duplicature embracing the uterus is greatly strengthened by the considerable amount of connective tissue which they contain between their folds. This connective tissue not only connects the folds of the peritoneum, but extends from the wall of the pelvis to the sides of the uterus, and is thus a direct means of support to the organ. In the pelvic cavity the utero-sacral ligaments, formed by folds of the peritoneum, with a large quantity of connective tissue and prolongations of pelvic fascia, are efficient ligaments.

FIG. 106.



Natural Position of the Body.

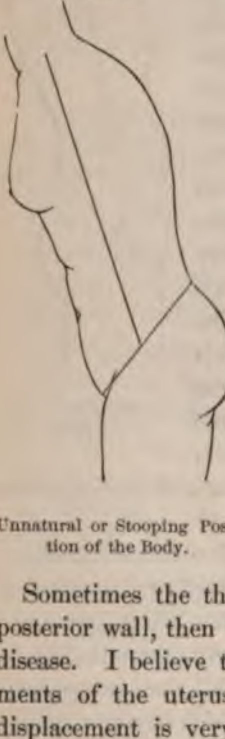
Below the uterus, the vagina, and the connective tissue binding it to the pelvic walls, at the side and in front, and further strengthened by the pelvic fascia, make decided resistance to displacing agents.

In the chapter on the perinæum I have already said sufficient in regard to its agency in supporting the uterus. All these supporting agencies are affected by physiological conditions which strongly modify their efficiency. Pregnancy, by the general hypertrophy it brings about in all the genital organs, completely disqualifies them as supporting agencies, and, until they are reduced to their proper firmness and length by involution, their effects in this direction are nothing. From recent physiological teaching we must believe that their supporting power is also reduced by the congestion and trophic changes accompanying menstruation. These varying efficiencies of the natural supports of the uterus are considerations of great importance in connection with the etiology of displacements.

Causes of Displacements.

In speaking of the direction of the pelvic axis I have already intimated that women who, from disease, debility, occupation, languor, or any cause, habitually stoop, and thus bring the axis of the pelvis nearly to correspond with that of the body, place the uterus in a position to be easily displaced. The pressure of the abdominal viscera upon its fundus, increased with the percussion of coughing, sneezing, and respiration, injuriously bear upon it. In these patients ascending stairs, walking, standing, etc., produce an exaggeration of these effects.

FIG. 107.



Unnatural or Stooping Position of the Body.

The position occupied by working on the sewing-machine, or even sewing by hand, ironing, washing, etc., is more mischievous than the work itself; and, if the same things were done with the body erect, they would be comparatively innocent.

Increase in size, and consequent weight of the uterus from tumors, congestion, inflammation, subinvolution, and elongation of the cervix are causes of displacement. When the size is increased in all its proportions the tendency is to prolapse; if the increase of weight is confined to the fundus there will be an inclination to anteversion or anteflexion, retroversion or retroflexion.

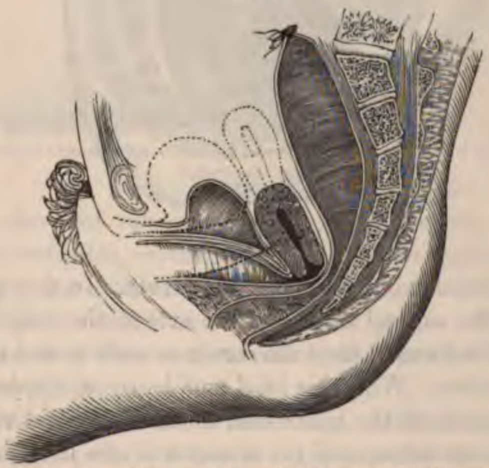
Sometimes the thickness or increased weight is in the anterior or posterior wall, then the inclination will be in the direction of the disease. I believe that pre-existing disease is the cause of displacements of the uterus in the great majority of instances, and that displacement is very seldom the cause of the disease usually associated with it. Loss of tone in the ligaments, flabbiness and softness of the vagina, relaxation of the attachments composed of fascia and connective tissue, and the want of strength in the perinæum, except when torn, generally depend upon coexisting disease, as subinvolution, general debility, senile atrophy, etc. There is no doubt, however, in my mind that the uterus weighing an ounce more than natural, especially in a person in whom the plane of the superior strait of the pelvis is too nearly horizontal, will in time overcome the resistance of all the means of support with which the uterus is surrounded, and determine a displacement of some kind.

Conditions outside the uterus, as a loaded condition of the intestines, which causes them to settle down upon the pelvic organs, straining at stool, especially when there is impaction of the rectum, jolts from jumping, straining from lifting or reaching, may be causes of displacement. I think it is impossible thus to displace a uterus otherwise in a healthy condition; but I do believe that such acts are the etiological items that complete a process already begun. I have not attempted to enumerate all the causes of displacement of the uterus. It is my design, in a general way, to merely indicate the manner of their action. In most cases many causes co-operate to bring about a displacement.

Lapse.

Simple falling of the womb in the direction of the axis of the superior strait brings it into a position in which the lower end of the cervix is inserted behind the apex of the perineal body, while the fundus is from half an inch to an inch below the ordinary level, and

FIG. 108.



Lapse or Descent of the Uterus, without change of axis, and the Displacement of the Bladder and Pressure upon the Rectum.

sometimes even more. In this displacement the lower wall of the bladder is drawn down in consequence of its attachment to the uterus, and occasionally a reservoir for the retention of urine is thus produced.

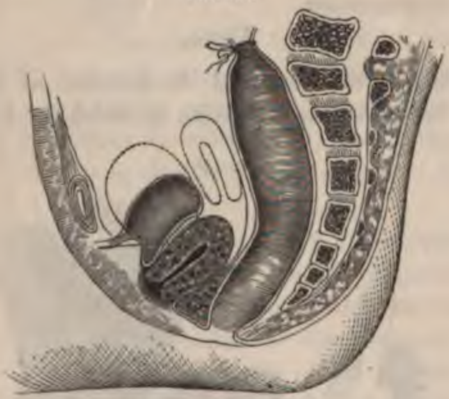
When this is the case dysuria is one of the symptoms. When of long standing, pressure upon the rectum gives rise to tenesmus, develops hæmorrhoids, ulceration of the mucous membrane of that viscus, constipation, etc.

This form of displacement is probably generally caused by some form of hyperæmia of the uterus instead of primary relaxation of the supports.

Prolapse.

When the perinæum is deficient, relaxed, or overcome by long-continued pressure, the cervix turns forward and the body of the organ lies in the vaginal canal, with the fundus backward upon the level, or, rather, above the level of the cervix. In this position with reference to the vaginal canal and the axis of the inferior strait, the organ may slide forward until the cervix extends to and even through the vaginal orifice. With this kind and degree of displacement there is some change in all the pelvic and lower abdominal viscera. The bladder is drawn down until the direction of the urethra is changed. The Fallopian tubes and ovaries are moved from their natural positions, and the rectum is generally more or less displaced forward and downward, while the intestines sink down into the pelvis, and by their weight increase the uterine displacement.

FIG. 109.



Prolapse of the Uterus.

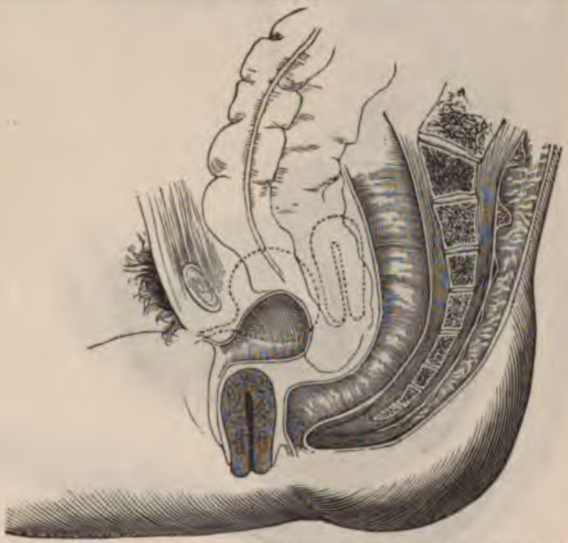
Of course the resistance of the ligaments is overcome to permit of such prolapse, and the vagina is more or less inverted.

Protrusion.

After the cervix has passed beyond the vaginal orifice, the direction of its descent is again changed, and when the whole organ is expelled or dropped from the body, the longitudinal axis of the uterus corresponds with the perpendicular axis of the body.

The uterus hangs down between the thighs. The extent and size of the protrusion is of course variable. Sometimes the whole of the uterus is thus protruded, covered with the inverted vagina, the fundus merely clearing the external parts, while at other times the whole of the uterus depends several inches below the pelvis. With this displacement there is always very extensive displacement of the pelvic and abdominal viscera.

Fig. 110.

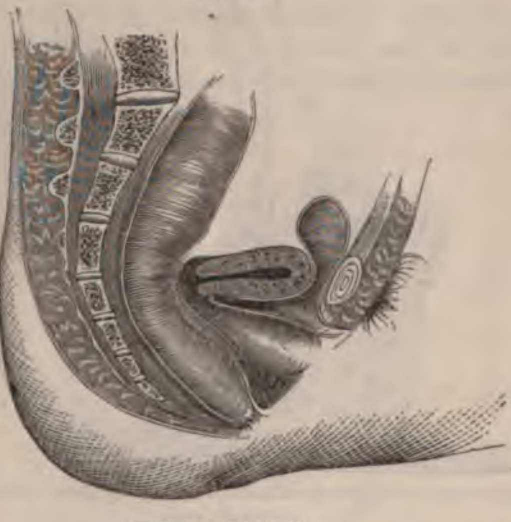


Protrusion of the Uterus, with attendant change in the position of the Bladder and Intestinal Canal.

The great vaginal hernia thus formed, sometimes contains the ovaries, Fallopian tubes, bladder, a large quantity of intestine, and elongated omentum. The viscera are sometimes so extensively displaced as to cause more or less descent of the transverse colon, stomach, and liver. In this last degree of protrusion the retentive power of the vaginal sphincter, perinæum, and all the ligaments is lost, and the only support left is the greatly distended and elongated vagina, which, as a kind of sac, contains this great mass of diverse organs.

Anteversions and retroversions without some flexion are not frequent displacements. These conditions until within a comparatively short time were all described as versions; now, however, the distinction between versions and flexions is recognized by the profession everywhere and is of great importance. In simple versions the uterus retains its figure, the fundus generally lying lower than the os, either before or behind the vagina. In anteversion the fundus falls forward upon the anterior vaginal wall, while the cervix points in the direction of the sacrum. It is a rare displacement. Retroversion is the condition in which the fundus falls backward and occupies the cul-de-sac, while the cervix is turned upward and forward, more or less nearly approaching the symphysis pubis as it is longer or shorter. In both these displacements the position and calibre of the bladder and urethra are affected, as in the one the fundus is pressed downward upon the bladder and urethra, while in the other the cervix bears them upward.

FIG. 111.



Anteversion of the Uterus.

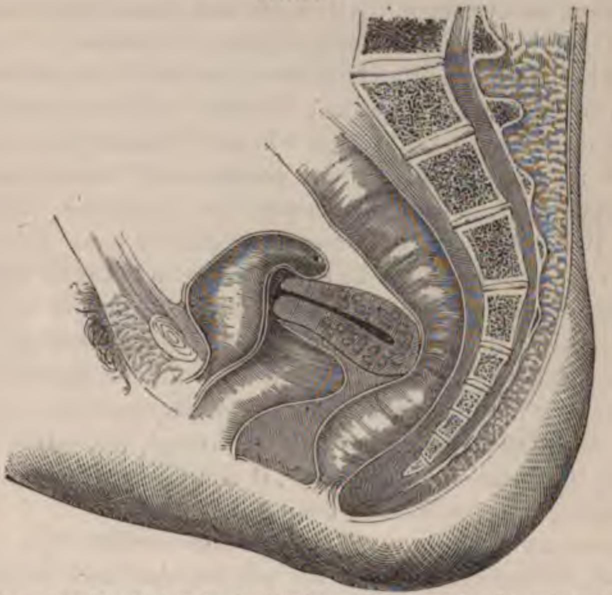
In flexions, which are always deformities, the cervix or body of the uterus is doubled upon the fundus, or expressing it differently, the fundus is bent backward or forward of the normal axis of the organ. Generally in flexions of the uterus the cervix is not much displaced, but in some instances the fundus remains in position while the cervix is bent forward or backward.

In anteflexions the fundus is bent forward and lies upon the bladder and anterior wall of the vagina, while in retroflexions the fundus is turned backward and occupies the cul-de-sac below the vagina.

There are several degrees of flexion in both varieties, some being bent very short, while in the others the flexion is slight.

Some gynæcologists believe that slight anteflexion is the natural condition of the virgin uterus, and is consequently of more frequent occurrence and of less importance than any other displacement. I have no doubt of the correctness of this view of the subject, yet extreme anteflexion sometimes gives rise to great inconvenience and suffering. I quite agree with Dr. H. Webster Jones, of this city, when he says that "retroflexion of the uterus is the most mischievous of all displacements and the most difficult to manage."*

FIG. 112.



Retroversion of the Uterus, showing the Fundus pressing upon the Rectum, and the Cervix encroaching upon the Bladder.

Symptoms.

The symptoms of displacement of the uterus are not sufficiently distinctive to characterize one condition from another or even to enable us to decide whether there is displacement or not.

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* A paper read before the Chicago Gynæcological Society at the April (1880) meeting.

Those displacements in which the uterus remains within the pelvis manifest their existence by the influence they exert upon the nervous and vascular apparatus.

The symptoms are for the most part those spoken of elsewhere as uterine symptoms, to which the reader is referred.

In fact these forms of displacement, when the uterus is in a healthy condition, do not give rise to any symptoms, and it is only when the uterus or some other of the pelvic organs are diseased, that the patient suffers inconvenience. All experienced gynæcologists meet with displaced uteri in which uterine symptoms do not exist.

But when there is uterine hyperæmia, subinvolution, ordinary congestion, or inflammation—and one of these conditions usually antedates the displacement—the patient will suffer from uterine symptoms.

These remarks do not apply to protrusion of the uterus, for in some respects the influence of this condition is peculiar. More frequently than otherwise the symptoms are entirely local. Locomotion is often not so much affected by extensive protrusion as by some form of version of the uterus. While I believe that the symptoms are generally caused by the hyperæmia of the uterus, and that this is the antecedent state of the viscus, there is no doubt but that the uterine disease is very much aggravated by the displacement, on account of direct pressure upon the nerves passing through the pelvis, and by changing the direction of the vessels, thus lessening their calibre and embarrassing the circulation in the organ.

The pressure upon the sacral plexus causes sciatica, or upon the nerves of the anterior parts of the pelvis neuralgia of the anterior part of the limbs. The circulation in the veins carrying the blood from the uterus is retarded, and congestion, with all its sympathetic accompaniments, results.

Diagnosis.

By physical examination there is very little difficulty in making out a correct diagnosis, unless when complicated. In lapse or simple falling of the womb a finger in the rectum will easily reach the cervix at the point where it presses upon that intestine.

By this method the cervix will be found just above the perinæum; it will be easily displaced upward and to the side, and the finger may be passed behind it and along its posterior wall. By the vagina the finger will pass downward and backward to reach the cervix, when it will easily recognize the shape and size of that part of the organ. To introduce the probe it will be necessary to draw the cervix forward with the finger, when it will pass upward and forward.

The retroversion or retroflexion will be easiest recognized by introducing a flexible probe or sound. The point of course will pass in no other direction than downward and backward. When the sound is in the cavity, if we turn it, the fundus will be lifted up into its proper place. The movement of the uterus under the influence of the sound may be best observed by the finger introduced into the rectum. If, after the sound is inserted into the uterus to the fundus, we pass the finger into the rectum and place it upon the fundus we can accurately observe the process of replacement. With the sound in the uterus fixing that organ, and finger in the rectum, the diagnosis between a small tumor and a retroverted fundus will not be difficult. The finger may be passed up over the fundus on the anterior wall of the uterus, and thus determine that the appearances are not caused by a small tumor which sometimes simulates the fundus. Anteversion may be diagnosed by the sound; passing it up carefully it will pass forward and upward, and at the same time lift the fundus from its position on the anterior wall of the vagina. If there is a sharp flexion we sometimes have great difficulty in passing the sound. In retroflexion, when this difficulty occurs, after passing the sound down to the flexion, the finger should be introduced into the rectum and the fundus lifted up enough to straighten the cavity so that the sound will pass. A finger in the vagina may be made to lift the fundus from the anterior wall of the vagina for the same purpose in cases of anteversion.

There is generally very little difficulty in diagnosing prolapse, as the finger will easily recognize the cervix, and the sound will pass directly backward instead of upward or downward. One would suppose that protrusion would be the easiest form of displacement to recognize by physical examination, and so it is generally. Sometimes, however, the shape, color, size, and consistency of the uterus are so changed by congestion, ulceration, and friction as to make it almost unrecognizable.

By carefully inspecting the protruding part, however, we will always be able to find the mouth, through which the sound may be made to pass to the fundus. The catheter introduced into the bladder will generally pass downward and backward into the tumor.

CHAPTER XXVI.

DISPLACEMENTS OF THE UTERUS, CONTINUED.

Treatment of Displacements of the Uterus.

PREPARATORY to speaking of the use of instruments for the support of the uterus reposited from a state of displacement, it will be proper, in a cursory manner, to describe conditions in which they are not applicable, and to which we must direct our attention before we can succeed in their use.

In cases of displacement where the vagina is sensitive, we will find any kind of pessary intolerable. Inflammation of the vagina and vaginismus are probably the most common conditions giving rise to the hyperæsthesia which precludes the use of the pessary; and when either of these morbid states are present, their removal is the first thing to be accomplished.

We sometimes meet with undue sensitiveness of the perinæum and lower portion of the rectum, rendering the use of some forms of pessaries entirely impossible.

This sensitiveness is often the result of simple hyperæsthesia; but more frequently it is caused by inflammation and ulceration of the rectum, fistula, or hæmorrhoids.

Hyperæsthesia from inflammation of the uterus, and especially in the acute and subacute forms, are incompatible with the use of pessaries. Simple hyperæsthesia, similar to that found in vaginismus, is a not infrequent condition of the uterus, which forbids the application of direct support.

Immobility of the uterus from old adhesions must be overcome, also, before we can venture upon pessaries.

Perimetric inflammation in the acute, subacute, or chronic forms contraindicate the use of support.

It might be considered superfluous to mention these conditions as incompatible with mechanical support; but it has been my misfortune to witness efforts made, and persevered in, to replace a uterus that was displaced by inflammatory effusion, and was only a part of a great mass, all of which was supersensitive from the actual presence of subacute inflammation. Instances of this kind, of injudicious attempts at restoration of the displaced uterus, are not confined to the practice of what might be termed ignorant physicians. We occasionally meet with them in the hands of the general practitioner who ought to know better. We cannot emphasize too strongly the injunction not to make attempts to restore the uterus when they are attended by pain, or when there is any abnormal increase of general temperature or a rapid pulse.

Displacements which are the effects of non-inflammatory effusions, as hæmatocele or peritoneal dropsy, cannot be replaced with any safety until the cause is removed.

It is seldom that mechanical support is devoid of peril when the uterus is displaced by tumors. For the most part, when there is a tumor situated in any part of the uterine tissue of sufficient weight to displace the organ in any direction, we ought to abstain from the use of pessaries. That there are occasional cases in which the patient may be made more comfortable by supporting the uterus and tumor I have no doubt, but I believe they are exceptional, and require the exercise of unusual skill to avoid mischief.

Before resorting to permanent mechanical support the uterus should be habituated to replacement by manipulation, pledgets of cotton, oakum, or other soft material. It is true that experienced gynæcologists, in favorable cases, are often able to adopt a pessary that may remain for an indefinite length of time doing no harm, but generally they are obliged to proceed cautiously and watch the effects before they can be sure that their instruments are profitably borne. I would again warn the inexperienced against repositing the uterus when it causes pain, or allowing an instrument to remain in the vagina when it produces suffering; and it would probably be equally proper to say, that in all cases the instrument should not only *not* cause pain, but be attended with a sense of relief.

The number of mechanical devices to replace and support the uterus is so great as to excite astonishment and skepticism in the ordinary observer. Almost every conceivable material has been employed in their construction; and while there are undoubtedly many contrivances which are merely the product of the imagination of the inventor and worthless, a large majority of them have some useful application. Almost every instrument of profitable fashion has a physiological as well as mechanical basis. It should, as far as possible, be made to perform its functions in imitation of the supports employed by nature. While this remark may not be applicable to all kinds of mechanical supports that may be made available, it will apply to a great many of them.

Another statement in reference to this formidable array of supporting instruments will not be out of place, and that is, a considerable diversity of inventions will be found necessary to success. We cannot expect to succeed in all cases by any one instrument or any class of instruments; we are, therefore, fortunate in having the benefit of so much ingenuity in this direction.

When the displacement is not extreme, much good may be done by frequent replacements by the hand or otherwise.

Patients can often be taught to replace the uterus themselves. The knee-chest position will do a great deal toward correcting most displacements of the uterus. The assumption of this position is especially useful in correcting lapse or falling of the organ, prolapse, and retroversion.

Dr. Henry F. Campbell, of Augusta, Georgia, contributed an able paper on the genu-pectoral position as an important item in the treatment of displacements of the uterus. (*Transactions of the American Gynæcological Society*, vol. i.) To make the position more effective, Dr. Campbell has invented a small glass tube (figure, p. 216), which the patient can introduce into the vagina to admit the air. In this way he avails himself of the effects of gravity in removing the pressure of the abdominal viscera and of atmospheric pressure through the vagina. Patients who are taught how to effect these objects by position may sometimes relieve themselves, temporarily at least, of the pain and discomfort attending malposition. If, after having occupied this position for a sufficient length of time, they will carefully lie down on the side for several hours, the consequences will be more effective, if not more permanent.

This position will often enable us to elevate the retroverted uterus by the fingers, which could not be replaced without the aid of instruments, and, in some instances, the introduction of instruments will be greatly facilitated by placing the patient in this position.

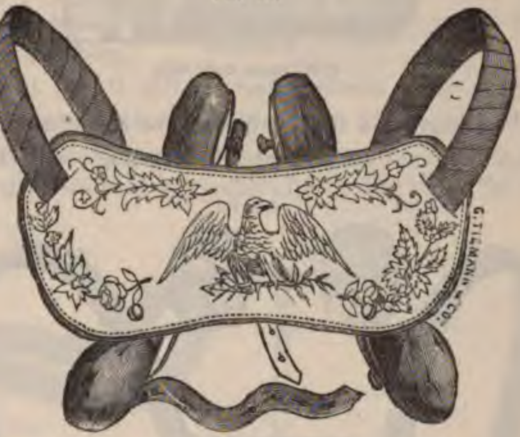
Instruments.

The instruments for sustaining the uterus in its restored position are used externally or internally, and some are partly external and partly internal. The external variety are usually termed abdominal supporters.

Supporters.

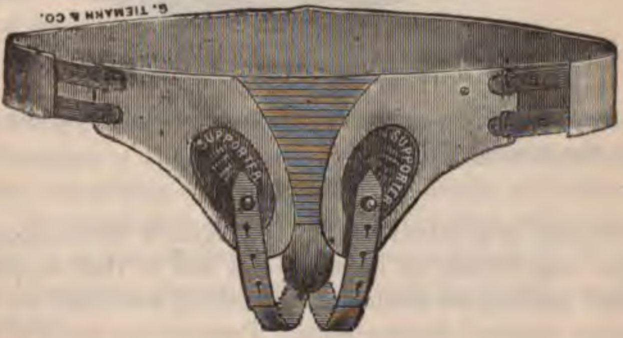
Their main object should be to restore and retain the pelvis in a proper relation to the spinal column. They are made by connecting two pads or disks, one for the back and one for the abdomen, by two flat metallic springs extending over the hips on each side. The disk resting on the back is sometimes double or quadruple, the divisions being about four inches apart, one above the other, and connected by springs. These disks rest on either side of the spine, and by pressing on it give it support. The anterior part is broad and placed just

FIG. 113.


G. TIEMANN & CO.

Fitch Supporter.

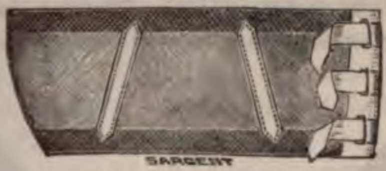
FIG. 114.



London.

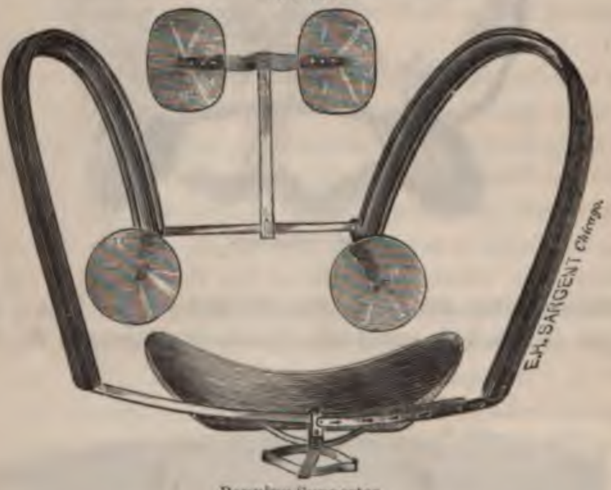
above the pubis. When properly placed, this instrument has a strong tendency to keep the patient erect. Shoulder-straps, to draw the shoulders backward, add to the efficiency of these instruments. The best of these external supporters are Banning's and Fitch's (London). An elastic bandage properly made will, to a certain extent, perform the same service.

FIG. 115.



Silk Elastic Body Belt.

FIG. 116.


E.H. SARGENT Chicago.

Banning Supporter.

Pessaries.

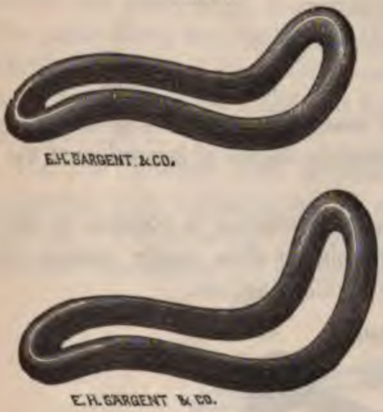
Instruments to be introduced into the vagina or uterus, upon which the organ may directly or indirectly rest and be thus supported in its natural position, are much more extensively useful and are adapted to a larger range of displacements. Pessaries are made of a great variety of materials and fashioned into very different shapes and sizes.

The great number and variety of pessaries lead to much confusion in considering the subject of their adaptation. There is so much difficulty in determining what each form of instrument may be made to do that the inexperienced practitioner is often unable to see in each one the character of the case to which it is suited. His practice, therefore, instead of being rational, is often haphazard, an utter failure, and sometimes injurious.

I have neither the time nor the desire to give an elaborate account of the different forms of pessaries, and the different cases to which they are adapted; but, for the benefit of the student, I will endeavor to classify them, so that he may at least get some useful hints in the methods of using them.

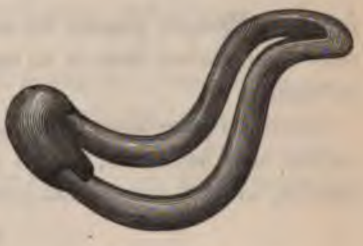
1st. The first class I will mention includes those pessaries which have for their points of resistance or support the vagina and perinæum, and I will term them vagino-perineal pessaries, because their shape is such that they are held in position by resting upon the perinæum, and by being grasped by the vagina. They consist, for the most part, of modifications of Hodge's instruments, as the Albert Smith pessary, and those resembling it. It is large posteriorly, and narrow anteriorly. The broad part surrounds the cervix uteri, while the narrow part lies in, and is retained in place, to some extent, by the anterior part of the vagina, the walls of which embrace it with some degree of firmness.

FIG. 117.



Smith's Pessary.

FIG. 118.

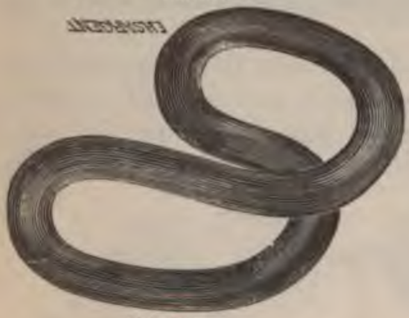


Thomas's Modification of Smith's Pessary.

But the instrument has a double curve on the flat. One curve enables the posterior part to rise behind the uterus and lift up that portion of the vaginal wall implanted in the posterior surface of the cervix, and thus draw the cervix backward and upward. The second, or perineal curve, adapts its concavity to the upper part (convexity) of the perinæum. It thus rides upon the perinæum and supports the uterus, and rocks backward and forward with the different movements of the viscera above, when impressed by respiration, or other movements of the body.

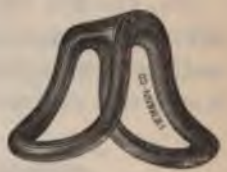
There are many pessaries that have these points of support. The second, or perineal curve, is a great improvement upon the earlier forms of Hodge's pessary for some cases. It is admirably suited to retroversion when there is no considerable degree of laceration of the perinæum.

Fig. 119.



Gehring.

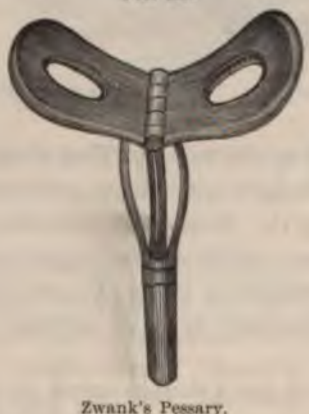
Fig. 120.



Hewitt.

There are some other pessaries that are retained in position by the vagina and perinæum, as the globe, elastic disk, cradle pessary of Hewitt, and the anteversion pessary of Gehring, etc.

Fig. 121.



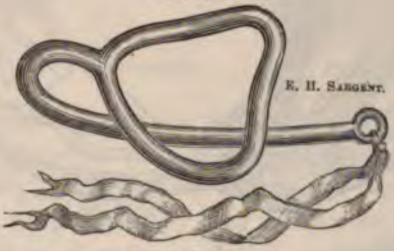
Zwank's Pessary.

2d. Belonging to the second class of pessaries are those which are supported upon the ischiatic tuberosities, or rami, and may be called the ischiatic. An example of this variety is Zwank's pessary. It has two branches, resembling wings, that, after the instrument is introduced, spread open, one on each side, resting upon the ischiatic bones. This instrument, expanding the vagina, lifts the uterus up, by virtue of the insertion of the vaginal walls into the cervix. It also affords a nearly flat, expanded surface, upon which the uterus may rest. It is very useful in cases of cystocele, when the anterior wall of the vagina prolapses to a moderate degree; this pessary will frequently do all that can be desired for temporary relief, and not unfrequently it accomplishes a permanent cure. This instrument has but little support from the perinæum or vagina.

3d. The third class of instruments have their bearings on the tuberosities or plane of the ischium and pubis. These are the various forms of rings: the round, oblong, or elongated, etc. The ring that is not curved on the flat side, if small, may, and often is, retained by the vagina, while the anterior segment rests against the pubis; but when large, it extends to the three points above named. The same thing may be said of the small and large disk pessaries, whether hard or elastic. Of course, when the perinæum is present in its entirety, all these different forms of pessaries find more or less support upon it.

4th. Still another class of pessaries, acting as levers, are partly suspended from behind or before, and rest upon the perinæum as a fulcrum. The intravaginal portion of some of these instruments have the retrouterine and perineal curves that belongs to the vagino-perineal class, but its anterior extremity is elongated, and to it is attached a tape or cord, that passes directly upward or backward between the thighs and upward to the waistband, to which it is attached. The posterior or retrouterine extremity, by pressing backward against the posterior wall of the vagina, elevates the whole uterus, and, carrying the cervix with it, throws the fundus forward. It is a very simple instrument, easy of application, and answers ad-

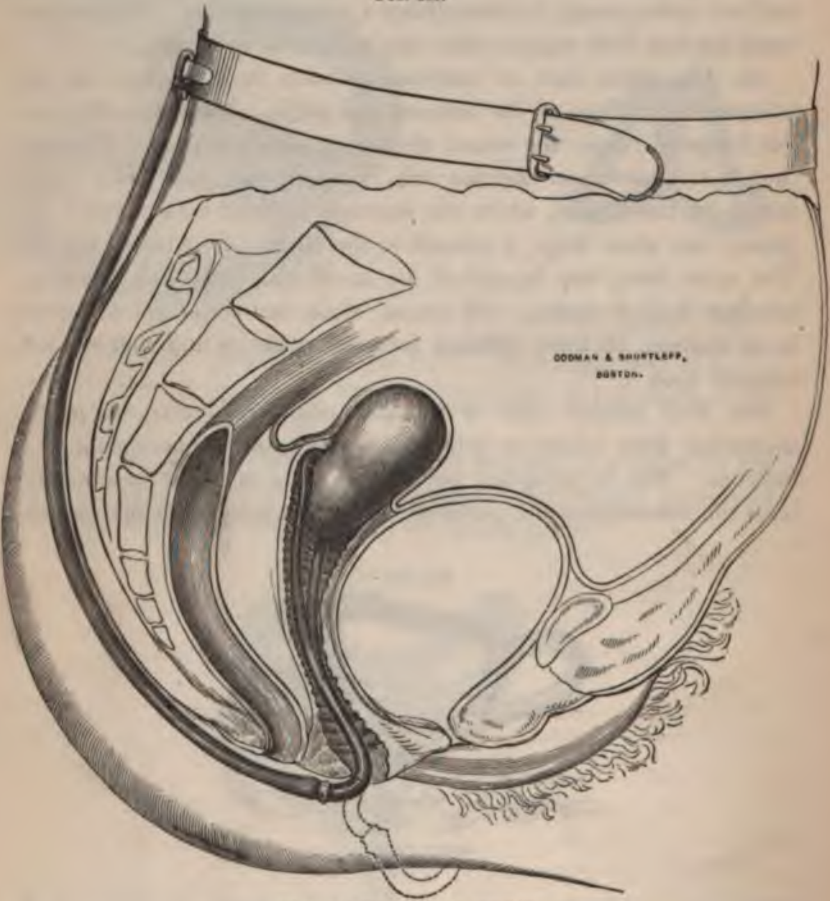
FIG. 122.



Scott's Pessary.

mirably in some cases of retroversion, lapse, and prolapse. Dr. Scott, of Woodstock, Canada, makes an instrument of iron or copper wire, and covers it with india-rubber tubing. The wire may be bent in any shape, and thus made to suit different cases. The ring part should be fashioned to fit well behind the uterus, and the projecting part bent so as to pass down between the limbs and turn up along the sacrum; to this end the string or tape is attached that fastens it to the waistband. Very little attention will enable the practitioner to adopt the instrument, and when once fitted the patient may remove and replace it.

FIG. 123.



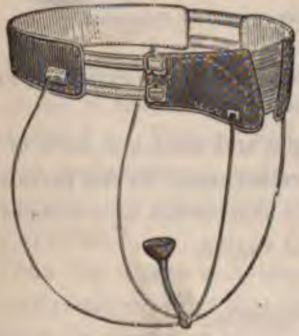
Cutler's Instrument in Position.

The two points to guard are the one behind the uterus and that upon the perinæum. Without care there is some danger of getting too great pressure behind the uterus or on the perinæum. These may be avoided by changing the curves to fit the parts comfortably. Cutler's instrument belongs to this class, and is admirably suited to the purpose of retaining the uterus in position after it has been elevated from a state of retroversion.

Suspension Pessaries.

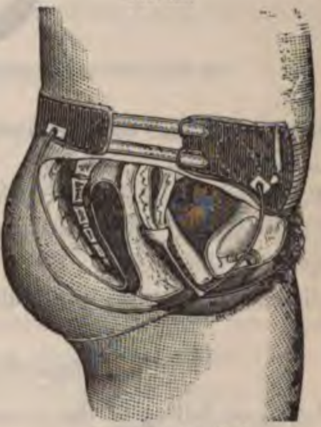
5th. These instruments have their resting-points outside the pelvis by fixed attachments to an apparatus around the waist. They are made in the forms of rings, cups, and stems, mounted upon a vaginal stem, which is connected with the outside attachment.

FIG. 124.



The Dr. McIntosh Natural Uterine Supporter.

FIG. 125.



Supporter Applied.

The vaginal stem is sometimes immovably fixed to some metallic support outside, and when placed is supposed to rigidly confine the uterus in position. In other instruments the vaginal stem is supported by elastic cords, generally four in number, extending to the waistband. In cases of entire or almost complete loss of the perinæum, this kind of support, as a temporary means, and calculated to give some relief until more radical measures can be resorted to, is sometimes useful. In very old patients, where senile atrophy has resulted in such extreme tenuity of the perinæum and vaginal walls as to render them incapable of resisting the downward pressure of the superincumbent organs, these instruments may sometimes be made useful. They are not, however, the proper kind of pessary to employ when the perinæum and vagina are in a condition to permit the use of pessaries described in class 1st. I might pass the intrauterine stem pessaries without notice if I did not desire to condemn them as supports. I am willing to condemn them mildly, however, because they are used by a number of eminent and careful gynæcologists with evident profit, and because, also, I have not had any extensive experience with them.

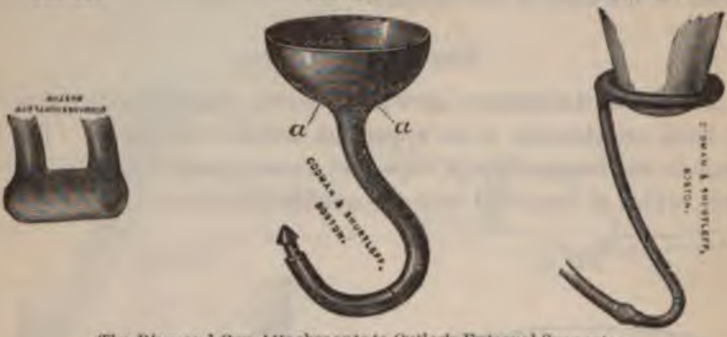


FIG. 126. FIG. 127. FIG. 128.

The Ring and Cup Attachments to Cutler's External Supporter.

Temporary pessaries, of various shapes and sizes, are made of cotton and oakum. They are not often relied upon for the permanent support of the uterus. They are very convenient as a vehicle for medicinal applications to the uterus and vagina.

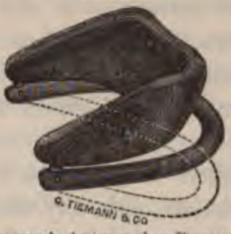
Adaptation of Pessaries.

Lapse or falling of the uterus is probably the least difficult displacement to treat successfully. It will frequently not be necessary to use a pessary. By relieving the hyperæmia, hyperæsthesia, and enlargement of the uterus, the depression will often be cured. For this purpose scarification, glycerin cotton, the local application of tincture of iodine, or iodized phenol, hot-water injections, sitz-baths, etc., persevered in for a sufficient length of time, constitute the proper course of remedies. If this is not sufficient we may resort to the Albert Smith or Emmett pessary, and keep it in the natural position until, through the freedom of circulation thus attained, the structural changes are removed, and the tissues of the uterus restored to their normal condition.

Anteversion.

The same remarks in reference to the removal of the hyperæmia and hyperæsthesia of the organ are applicable to this form of displacement as in falling of the uterus. When not very much displaced in this direction, it will seldom be necessary to resort to supports; but when the malposition is extreme we may very properly employ either Gehring's, Hewitt's, or Thomas's anteversion pessary, any one of which must be used with the precautions mentioned above.

FIG. 129.



Thomas's Anteversion Pessary.

Retroversion.

There are many cases of moderate retroversion, especially when the uterus is not unusually heavy, or sensitive, in which support is not called for. Patients will often have this kind of displacement without inconvenience, and I hold it to be an absurdity to interfere with this or any other form of displacement that does not give rise to symptoms.

When the uterus is enlarged, sensitive, and strongly retroverted, we may justly consider that the venous circulation is interfered with, and that the correction of the displacement is an important if not an essential measure in the treatment. Even in such conditions as are here supposed, the restoration of the position is only one of the means requisite to secure success. The other conditions must be attended to in a thorough manner, until the shape, size, and consistency of the uterus are restored.

In the worst forms of this displacement the uterus and tissues upon which it has for a long time exerted injurious pressure, will not at first tolerate an instrument capable of keeping the organ in place, and it will be necessary to use soft and temporary pessaries, as cotton or soft rubber instruments, until the complicating conditions subside, or are much improved, and then they must often be employed intermittingly in order to avoid harm. Dr. Campbell's method of replacement by the knee-chest position as above described, will often be tolerated and beneficial when no instrument, of whatever material composed, can be borne. Sometimes frequent restoration will be all we need do toward restoring the uterus, while the other treatment is removing the cause or causes of the displacement. When there is no tenderness or other complication we can often at once introduce a permanent pessary; but when we do this, we should carefully watch the case, and remove the instrument at the first warning given by pain or tenderness. Scott's, Cutter's, Albert Smith's, Emmett's, and Thomas's pessaries are all under certain circumstances useful and successful in retroversion, and they afford a sufficient variety from which to choose.

The question of adhesions binding the uterus in a malposition scarcely comes up in relation with any other displacement, but in this it is one of very great importance. Impaction is much more frequent, and is often mistaken for adhesion. It should be remembered that these adhesions are the result of inflammation, and generally local peritonitis, and that this last-named condition is often present in a subdued degree for a long time after the effusion resulting from it has hardened into a false membrane.

This circumstance will be a standing caution to the considerate practitioner. It will be easy by a little indiscretion, in our attempts at restoration, to arouse a more acute form of inflammation, and thus do much mischief. When there is tenderness behind the uterus we cannot be too careful, indeed we should always wait when there is good reason to apprehend local peritonitis until every evidence of it has subsided. And this will generally require a long time, even if judicious treatment is employed. The repositor in such cases is a very mischievous instrument, if it is not *always* a questionable one. Position and the fingers will nearly always be the best means to reduce the retroverted uterus, as well as to make the diagnosis between impaction and adhesion.

As a general rule it will be found that, when the patient is placed in the knee-chest position and two fingers of one hand introduced into the vagina and two of the other into the rectum, the impacted organ can be lifted out of its false position without giving her much pain. When there are adhesions, however, this would be both painful and impracticable, and we must desist from the effort, and pursue a course of treatment calculated to cure the inflammation.

Are there *any* circumstances under which we are justified in breaking up these adhesions? I think not, and but few where it is advisable to stretch them so as to permit the uterus to be replaced and kept in position by a pessary. From observations, frequently repeated, I am sure that the absorption and disappearance of them are frequent and may be looked for after sufficient time, and that it is better to wait an unnecessary length of time for this to occur than it is to run any risk of awakening dormant mischief in the peritoneum or cellular tissues.

When we are satisfied of the removal of these bands of lymph, efforts to raise the uterus by posture and manipulation should be continued for some time before using the cotton or soft rubber pessary.

There are several conditions of the vagina and cervix uteri not yet mentioned that are calculated to embarrass the inexperienced in the successful application of the pessary in retroversion. When the posterior reflexion of the vaginal wall is short, and the cervix is placed so far back as almost to seem implanted into the end of the vagina, it is sometimes difficult to make a sure lodging for the pessary behind it. In that case I believe Scott's instrument to be the best, because it can be bent to any angle or length, and retained in position by the external branch, so as to press under and behind the cervix with much exactness.

When the intravaginal cervix is very short, so that it will easily slip over the side or back part of the instrument, I know of none better than Scott's. It is certainly more easily adapted to, and kept in proper relationship with, the contour of the posterior part of the vagina and in constant relation with the cervix than any instrument which lies wholly within the vagina.

Another very embarrassing condition is a strong inclination of the retroverted fundus to one side, with the cervix lacerated. When the uterus, thus twisted, is reposited, the instrument to be effectual in its bearing must press upon the vaginal wall on the side opposite to the induration of the cervix. A pessary, like the Albert Smith or Emmett, that finds its support entirely within the vagina, is very hard to adjust, on account of most of the weight resting on the side instead of one of the ends, as in ordinary retroversion.

When, in consequence of the shortening of one of the broad ligaments, the cervix is strongly drawn to one side, much care will be necessary in placing an instrument so as not to make too much pressure upon the short side, and yet give the proper support. In all such cases there is good reason to fear that there is a lurking chronic inflammation in the ligament to which the cervix is attracted, which upon slight provocation will be aggravated and become acute. In adapting the instrument pressure upon the suspicious ligament must be avoided. The instrument should be so moulded as to make moderate traction upon the opposite side of the vagina. I say moderate, because forcible traction will not be borne, will be likely to give pain, and may possibly cause inflammation. And here again the skilful use of Scott's pessary has, in my hands, yielded the best results. Of course in this class of cases much care in moulding, placing, adapting, and watching, will be indispensable to success in the use of this or any other instrument.

The treatment of protrusion or procidentia is founded upon the three indications derived from the nature of the case. Restore the perinæum, remove a portion or cause contraction of the hypertrophied vagina, and strengthen the relaxed ligaments. My own experience is decidedly favorable to the use of artificial support, and in a great many instances it will be practicable and effective. If the uterus can be kept in its proper place, the ligaments will contract and become more resistant, the vagina also diminishes in size, and if the perinæum is not partially lost it will assume its tone and relative form and position. Such pessaries as may be made to sustain the organ without distension or pain are best adapted to the work. In fact the vagina ought to be distended as little as possible. They should not rest on the perinæum for support. Those supported externally are most successful when they can be tolerated. It is true that we sometimes succeed with globe pessaries, or disks, or lever, or ring pessaries. When the perinæum preserves much of its tone these instruments will fill the indications, but not otherwise. An air-bag globe of small dimensions at the upper end of a stem, will be tolerated often and prove very useful. The stem may be planted upon a shield that sets upon the external organs outside, and there retained by straps or bandages. This is a better way than to have a stiff rod reaching out and up to the top of the pelvis, or even up the abdomen. So long a rod under all movements of the body, bears with rigid fixedness upon the uterus. To fix the instrument at the vulva with a cord or band, places it where it is not subject to every form or great latitude of motion, while it does somewhat yield to internal pressure. The great trouble in the use of these instruments is that sometimes, after our best efforts to secure the results, they are not tolerated, too much sensitiveness of the parts preventing them from being worn. The pessary ought to be worn only when the patient is in the erect posture. It should be taken out after lying down and reintroduced before rising in the morning. Patience in selecting and modifying the shape of the pessary, with a clear view of the indications to be fulfilled, will sometimes enable us to succeed perfectly after having made a discouraging number of trials. We should study the case, and learn why the instrument is not tolerated, and correct the difficulty by changing or correcting the qualities of the instrument. It is remarkable how the vagina and perinæum will contract and become strong, when the uterus is kept in its place for some months. An ingenious use of artificial support will cure as many if not more cases than any other one sort of treatment. Astringent injections should be perseveringly used in connection with the artificial support. Saturated or very strong solutions of sul. acid, tannin, acetate of lead, etc., and decoctions of astringent bark, as oak, are the most eligible and effective forms for them.

An efficient use of astringents would appear in some cases of extreme prolapsus to be sufficient to effect a cure.

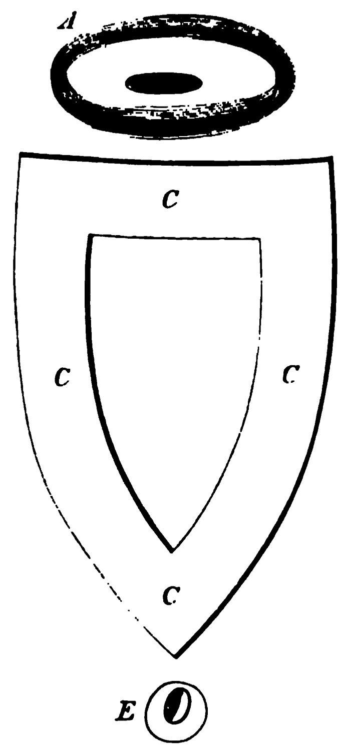
Dr. G. P. Hackenberg, of Rochester, N. Y., reports two cases in the *Medical Record* cured by what he calls packing the vagina with tannic acid, and says with reference to others: "I have treated with uniform success many lady patients who were subject to prolapsus uteri." Again he says: "I have hardly failed to control the most obstinate cases of prolapsus by this treatment." I here give a description of his plan as given in his own language:

> "A glass speculum was introduced into the vagina so as to push the uterus into its place. Through the speculum was introduced a metallic tube or syringe, with the end containing about thirty grains of tannin. With a suitable piston the tannin was now pushed out of the cylindrical tube against the uterus. The cylindrical syringe was then withdrawn, and the packing was neatly and effectually completed with a dry probang around the mouth and neck of the womb. After the packing was completed the probang was placed against the tannin in order to hold it, and the speculum was partially withdrawn. The packing was now fully secured. The probang was next withdrawn, closely followed by the speculum.
>
> "The application of tannin held the uterus firmly and securely in its place, not by dilatation of the walls of the vagina, as in the case of the use of a pessary, but rather by an opposite condition—by corrugating and contracting the parts. The patient was promptly relieved by the application, and to her great astonishment was able to take long walks with comparative comfort.
>
> "The happy effects of this packing continued about a week, when symptoms of a relapse began to show themselves. Another packing was resorted to, with the same good effects. As we proceeded with the treatment of the case we prolonged the intervals of the application. At first they were made weekly, finally but once or twice a month. In two years the cure was completed, and I understand that the lady enjoys comparatively good health since.

"The almost constant application of tannin to the uterus not only overcomes the hypertrophy and elongation of the cervix, but I think even induces a slight atrophy of the parts. At no time did the patient suffer from this local treatment."

Surgeons have generally in their operations addressed themselves to but one item in the case. One party operates upon the perinæum, restoring or lengthening it, more or less completely to close up the vaginal orifice, while another party lessens the diameter of the vagina itself and condensing its walls into cicatricial or undistensible tissue; and it is feared that the success of one procedure too frequently leads the operator to almost indiscriminate repetition of one kind of operation, instead of acknowledging the importance of another and the necessity of meeting it with a different sort of surgery. Two, quite different in their nature, have been perfected and practiced by two

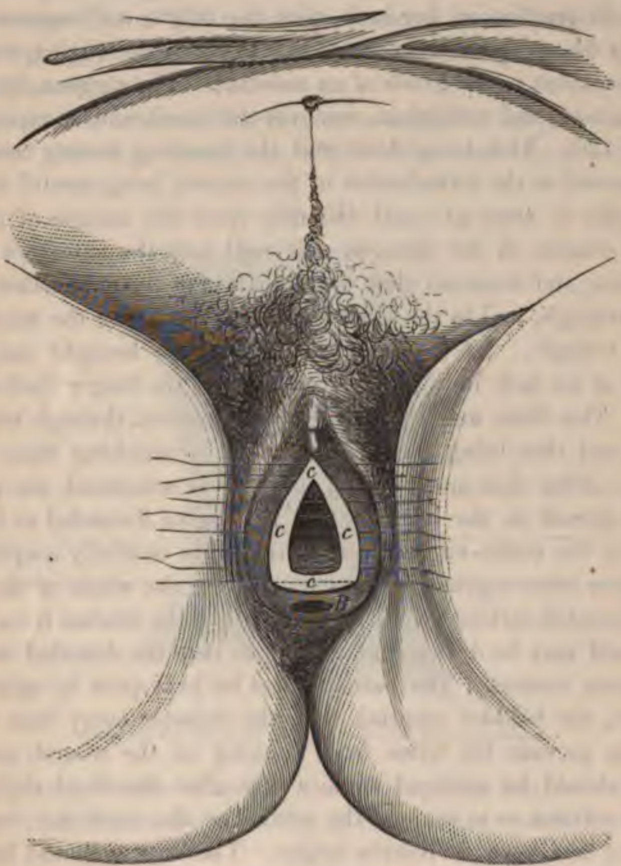
FIG. 130.



A. Cervix Uteri. *E.* Urethra. *C C C C.* Denuded Surface.

great representatives of female surgery, viz., Dr. J. Marion Sims and Mr. I. Baker Brown. Dr. Sims operates on the walls of the vagina. His operation consists in removing the epithelium of the mucous membrane, so as to denude the latter thoroughly, around a triangular space on the anterior wall of the vagina. The base of the triangle is at the cervix and the apex near the urethra. It is represented by

FIG. 131.



Showing the Uterus Entirely Protruded from the External Organs. *A.* Urethra. *B.* Os Uteri. *c c c c.* The Denuded Parts, with the Wire Sutures ready to approximate the Denuded Edges.

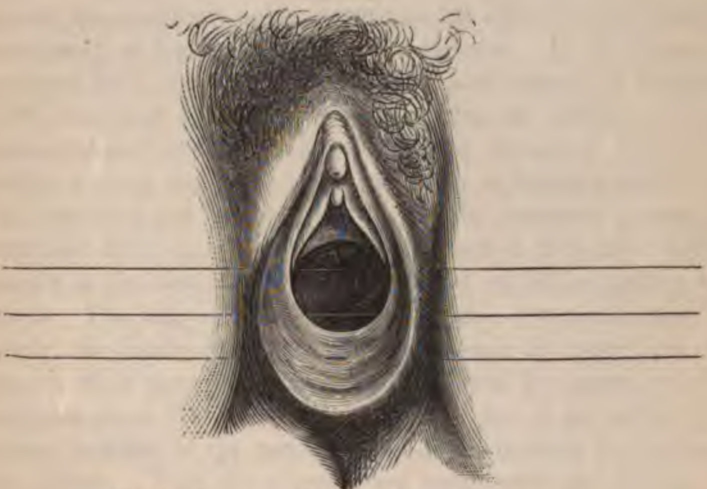
Fig. 130. Dr. Sims recommends this to be done with the uterus returned into the vagina, but I cannot understand why the operation may not be more easily done with the uterus in its procident state. I have never done the operation, but I certainly would denude the

membrane and insert the silver wires as they are seen in Fig. 131, then return the uterus, and afterwards bring the parts in apposition, and keep them so by twisting the wires. Dr. Emmet prefers the scissors to remove the membrane to the knife; he thinks there is less bleeding. The patient is prepared for the operation by thoroughly evacuating the bowels the day before, and administering, an hour before its commencement, half a grain of morphia. Chloroform ought to be given so as to keep the patient unconscious. Then placing the patient in position on her back, with the thighs well separated, the uterus is drawn down so as completely to invert the vagina, and held by a tenaculum in the hands of an assistant. The surgeon, by means of the scissors and tenaculum, removes the membrane, as represented in Fig. 130. This being done, and the bleeding having ceased, he may proceed to the introduction of the sutures, being careful to cause the needle to enter at equal distances from the margin of the cut surface outside of the triangle, pass well into the substance of the membrane, and come out close to the margin of the cut surface inside of the triangle, and in the same manner to dip under the other limb of the triangle. At the base they should be brought out every quarter of an inch in the cut, crossing from the longer limb of the figure. Drs. Sims and Emmet pass silk sutures through with the needle, and thus bring the wires through by attaching them to the thread. After this much of the operation is completed, the patient may be turned on the left side, and the vagina distended as for the operation for vesico-vaginal fistula, the parts carefully coapted, the upper two wires requiring great care to bring the whole of the elongated denuded surface together. The rest of the stitches from above downward may be drawn and twisted so that the denuded surfaces lie in even contact. The patient must be kept quiet by opium for ten days, the bladder emptied with the catheter every four or six hours, to prevent the urine from running on the wound, and the vagina should be syringed twice a day after the third day. Dr. Emmet advises us to remove the sutures on the tenth day, but says they may be allowed to remain longer. The sutures should be sufficiently numerous—every quarter of an inch—to keep the parts thoroughly in contact, and they must be drawn tight enough to bring them well together without strangulating them. For direction as to twisting the wires, the reader is referred to the remarks, on this subject, in the article on vesico-vaginal fistula. They should be cut and arranged after being twisted, as in the operation for that accident. This operation is applicable to cases where the hypertrophy of the vagina is very great, and the perinæum entire but much distended.

Mr. I. Baker Brown's operation is applicable to those cases where there is a deficiency of perinæum from laceration. It consists in denuding the posterior wall of the vagina an inch above the raphe of the perinæum, and up the sides of the orifice two-thirds of the inner surface. The mucous membrane should be pretty thoroughly removed in order to give a solid substance for adhesion, deep stitches as for restoration of the ruptured perinæum passed, and the parts evenly adjusted. Fig. 132 shows the surfaces prepared and the sutures inserted.

There can be no doubt but that cases might be cured by a combination of these two operations, where either one alone would fail. In such cases, Sims's operation should be done first, and after the patient is entirely recovered from it, the deficient perinæum can be restored.

FIG. 132.



Showing the parts, *cc*, Denuded and the Sutures passed.

In performing the operation of lessening the calibre of the vagina I have sometimes removed the mucous membrane from the whole area included in the triangle of the incision as represented in Fig. 130, and then burying the sutures in the submucous tissues across the whole face of the wound thus made. This I think forms a more solid cicatrix. Schroeder I believe does the same thing, his patch of denudation, however, is oval instead of triangular. Dr. Gillette has operated successfully for protrusion by passing sutures under the mucous membrane without denuding it.

His operation simply condensed the walls of the vagina. On two occasions I have imitated him so far as to pass the sutures around a sufficient area, and draw it in like a puckering string of a purse without denudation.

CHAPTER XXVII.

DISPLACEMENTS OF THE UTERUS CONTINUED.

Retroversion and Retroflexion of the Uterus during Pregnancy.

THE uterus is sometimes found retroverted or retroflected during pregnancy. When small during the first few weeks of pregnancy, its existence is not observed because it produces no inconvenience, and it is not until it grows large enough to partly or completely fill up the pelvis that anything is known of it unless discovered by accident. If it is examined at such time, the os uteri will be found against the symphysis pubis, sometimes but little above the arch, but occasionally as high as the top of that junction. If the uterus is retroverted fully, the mouth looks upward and forward; if retroflexion exists, the os is still at the symphysis, but its opening is directed *downward* and forward. In this last case the cervix is bent upon itself at a sharp angle, the lower extremity as before remarked looking downward and forward, and the uterine extremity turned backward and downward. So that the difference in these two conditions consists in the bent state of the cervix, and not in the position of the uterus. The body of this organ has its axis reversed almost completely, the fundus extremity running through the lower bone of the sacrum, while the upper extremity of the axial line passes out of the abdomen above the symphysis. The body lies in the hollow of the sacrum included in the peritoneal cul-de-sac between the vagina and the rectum. Both these canals are compressed, the rectum hard against the sacrum and the vagina up against the pelvic bone. The direction of the vagina is upward and forward instead of backward, its usual course. The finger cannot be made to sink deep into the vagina except behind the pubis; in introducing, it turns upward and forward. The urethra runs up in close contact with the symphysis pubis, and is narrowed very materially by extension and pressure, so that it very imperfectly performs the function of a viaduct from the bladder.

Causes.

Although pregnancy usually corrects misplacements of the uterus, such is not always the case, for this condition is sometimes a mere continuation of its unimpregnated position. It is well understood by accoucheurs also, that in the early months of pregnancy the normal position of the organ is depression, and that prolapse and retroversion are not unusual effects of recent impregnation. Under certain circumstances this last deviation is not corrected by the advance of growth in the organ. Where other causes co-operate, a distended bladder may aid in causing the uterus to assume and retain this position, as may also loaded intestines pressing upon the fundus and anterior face. These causes and perhaps others operate to bring about a gradual displacement, but there are some that cause the condition suddenly. It should be remembered that it is only at a certain time that these sudden causes can produce the effect, and that is after the end of the third month and before the beginning of the fifth month. It is about this time that the uterus attains a bulk sufficient to partly or entirely fill up the pelvic cavity. If when it has attained this size a sudden impulse is imparted to the fundus and anterior face of the organ, the fundus may be crowded so low into the hollow of the sacrum as to reverse the axis. In this state the forces acting in favor of correction are feeble and may fail to bring it about. Strong abdominal pressure upon the intestines and bladder under tenesmus, falls upon the feet or breech, lifting heavy weights, and even severe sneezing and coughing, are occasionally causative. In the cases where the efficient causes are suddenly applied, the symptoms are acute and established at once. In the other cases the train of symptoms gradually make their appearance.

Symptoms.

When induced suddenly the patient is seized with great pain in the back, with a sense of weight upon the perinæum, constipation, retention of urine, tenesmus, dragging sensation in the loins, and often though not always, sickness of stomach and vomiting. If gradually established, the pains, constipation, and retention of urine are slowly established, requiring from seven to twenty-one days or more to render them intolerable. I knew a case caused by a woman riding all day in railroad cars without urinating.

There are two important symptoms, viz., retention of the urine, and of the fæces; from these result most of the distress complained of. Great distension of the bladder and the terrible suffering thereby produced is the worst. The student should bear in mind that quite frequently this symptom is deceptive. The urine is constantly dribbling from the meatus, and the patient thinks, and will say, she passes plenty of urine. The fact of this constant slight discharge should cause us to suspect that the bladder is distended; it does not occur when the bladder is empty; it is not sufficient to prevent it from being distended. Indeed I do not now recollect any condition but overdistension that causes it. Retention of fæces is not productive of so great trouble as the other, but is attended with more or less inconvenience.

Great pelvic distress, with *stillicidium urinæ*, are almost characteristic of retroflexion or retroversion, when recent pregnancy exists.

Diagnosis.

This is usually not difficult. The first, a very important consideration, is the existence of pregnancy. Upon making vaginal examination immediately upon introducing the finger it comes in contact with a tumor. The pelvis is filled up by it in the posterior and lower part so that the finger is directed upward and forward. Very high up the vaginal cavity is quite small from pressure, at its extremity; in contact with the pubis is the *os tincæ*, very firmly held in its place. The tumor is *round*, elastic, and smooth; not so hard as fibrous tumors, more central than ovarian, and more uniformly round than extrauterine pregnancy. It may be ascertained in most instances, also, that the tumor is larger toward the sacrum than the symphysis.

Termination.

When left to itself retroversion may terminate in abortion, when the contents of the uterus will be expelled and the symptoms thus relieved; or the bladder may be ruptured, the urine being discharged in the peritoneal cavity, causing painful death; or the uterus may be ruptured, and its contents discharged in the cavity of the peritoneum, giving rise to fatal peritonitis; or the fœtus and its membranes may be surrounded by fibrinous material, the patient recover, and these substances remain there enveloped; or, inducing local suppurative inflammation, be discharged by exulceration. Sometimes the tenesmus becomes so great as, by the violence of the efforts, to break through the posterior walls of the vagina and uterus, and discharge the contents through the vulva from this artificial opening. Inflammation sometimes arises without being initiated by any of these disastrous accidents, and less suddenly causes the death of the patient. I think there can be no doubt but that there are very rarely cases of spontaneous reposition, recovery, and completion of the term of gestation.

The prognosis is unqualifiedly bad if left to nature, but equally favorable if intelligently treated at the proper time.

Treatment.

The main thing to be done is to replace the uterus. This can very generally be accomplished. The attempt should not be delayed, as the uterus is constantly increasing in size, and the impaction becoming more certainly greater, increasing the difficulties as well as dangers. To facilitate the replacement the bladder should be emptied by the catheter when practicable, and the fæces removed from the rectum. This takes away some of the obstacles. Sometimes the urethra is so tortuous in its course, and the walls compressed so completely together, that a catheter will not enter the bladder. An elastic catheter will sometimes pass the obstruction when the metallic will not; whichever we may use should be urged forward with the utmost gentleness, bearing in mind the great danger of perforating the attenuated urethra. The patient should be placed upon her knees and chest, or on the left side, with the left arm behind her, the thighs strongly flexed, and the right drawn up close to the abdomen and thrown forward. She should be placed on a table or the edge of a bed, so that the genital organs are easily controlled by the operator. In this position we may often succeed in replacement by the hand alone. The right hand should be well lubricated, and all the fingers be introduced into the vagina, so that the palmar surface is turned to the sacrum. The tumor is thus pushed up very gently and slowly, with the pulps of the fingers pressed closely upon the face of the sacrum, as high as the hand may be made to reach. There are not many cases in which the fingers will fail to carry the fundus above the promontory of the sacrum. When thus elevated it suddenly starts up and assumes the normal position. If, however, the fingers do not reach high enough for this purpose, a collapsed gum-elastic bag or bladder may be carried up between the fingers and the uterus, and, when elevated as much as we can reach, the bag may be inflated sufficiently to raise the uterus high enough. I have succeeded in all the cases I have tried with this method, and I think, when the impaction is not so great as to preclude dislodgment, that it will almost invariably succeed. Some surgeons recommend the introduction of the empty bag into the rectum, and inflating it there, and pushing it up; others introduce a drumstick, with the end cushioned and lubricated, into the rectum, and, pressing it against the uterus, elevating it in that way. Again, an instrument is used not unlike two drumsticks, somewhat curved, attached together. The attachment confines the ends very near each other. The end of one of the branches goes into the rectum, and the other into the vagina. Thus arranged they pass up and carry before them the uterus. These expedients are very sure, but rough, and not a very safe means of arriving at the results. I think as much force in a proper direction can be applied by the fingers and elastic bag as it is judicious to employ in such cases. There are other methods of proceeding, but I do not think it necessary to mention any other, as these will suffice when reduction is practicable.

In all these efforts to elevate the fundus we may fail, and then we may evacuate the uterus. This can generally be done by passing a bent probe through the mouth of the uterus far enough to rupture the membranes, and permit the escape of the liquor amnii. This being done, abortion will soon ensue, I can conscientiously only mention, for I can hardly think the operation of puncturing the uterus with a trocar through the vaginal wall ever commendable or necessary. The cervix is probably hardly ever so inaccessible but that some form of bent instrument can be made to enter it.

CHAPTER XXVIII.

DISPLACEMENTS OF THE UTERUS CONTINUED.

Inversion of the Uterus.

INVERSION is the turning of the uterus inside out, with the fundus down and the cervix up, a reversion of its surfaces and ends. It is partial or complete. When partial, the fundus is depressed in all degrees, from a mere indentation to a considerable protrusion through the cervix and os uteri. The depression of the fundus, or partial inversion, passes into complete when the whole organ, fundus, body, and neck, have passed through the mouth, and hang down below it. It presents a recent and a chronic form. The recent may be regarded as extending through the first two weeks; after which, the circumstances and condition of the uterus and patient become what they remain in the future, however long it lasts. The uterus, in that time, has been condensed by contraction and involution to such an extent as to make the case permanent and difficult of change, except to diminution and further condensation. Inversion almost invariably occurs anterior to or at the time of the removal of the placenta, but several hours, and, in very rare cases, several days may elapse before it is complete and discovered; for it is quite probable that in these instances partial inversion or greater or less depression of the fundus had existed from the time of delivery. It is believed by different parties that there are two modes observed in the process of inversion. Sometimes the fundus is indented or depressed in the cavity of the body like the bottom of a "junk bottle," the depression rapidly or slowly increasing until it is completely down. At others, the whole of the fundus, and, more or less, the whole of the body, are firmly contracted, while the cervix remains flabby and relaxed. In this condition a slight amount of abdominal tenesmus will drive the contracted part down through the relaxed cervix; and thus initiated, it requires but a continued action of the fibres of the organ and abdominal muscles to finish the process. The causes of inversion are not always obvious, as cases have occurred under circumstances when least expected from any discoverable reasons, and inversion fails to be brought about by circumstances that are usually enumerated as sufficient. We occasionally meet with instances that have no history, and neither patient nor physician can give us a clear idea of the time or manner of the occurrence. Such a case was a subject of litigation in this city a few years since. And other cases are recorded in virgins, and consequently referred to congenital origin. In a large majority, however, we may trace the history back to accouchement. The predisposing causes are enlargements and partial or complete passiveness of a part or the whole of the muscular fibres of the uterus. These are the conditions in confinement at full term, or abortion or premature labor, also enlargement from hydatids, hydrometra, tumors, etc. When the uterus is thus enlarged and lax after a greater or less loss of its contents, traction on the cord or placenta, or contained tumor, or injudicious or accidental pressure on the fundus by the hand of some person, or the action of the abdominal muscles thrusting the contents of the abdomen downward upon that part of the organ, it may be inverted. It is possible, I think, also, that powerful, irregular action of the fibres of the uterus may cause the initiation and completion of the process of inversion. It is then said to be spontaneous. The weight of the placenta, or the contraction to expel a polypus, may commence inversion, and even complete it. The irregular contractions that result in inversion may commence before the expulsion of the child. After the liquor amnii has been discharged for a long time, the uterus contracts to suit the inequalities of the fœtal surface, the globular shape of the organ being replaced by inequalities in a number of places. Much is yet to be learned on this subject. It would seem clear from statistics brought forward by Drs. West and McClintock that it is exceedingly rare, if it ever occurs, under good management of labor cases. It has not been encountered in patients confined in the London Maternity Charity, nor the Lying-in Hospital of Dublin in 140,000 cases. The student is not to consider from this that it is impossible for it to occur in the hands of the ablest of accoucheurs.

Symptoms.

Usually these are appalling in the extreme. Without warning the patient is seized with faintness, coldness of the extremities, sense of great prostration, rapid and very feeble pulse, oppression about the heart, copious perspiration, hurried breathing, often vomiting, ringing in the ears, and blindness. Soon these symptoms increase, until the patient lies in a profound state of collapse, indifferent to everything transpiring around her, or throwing herself in every direction in paroxysms of agony inexpressible. This condition of collapse is not always the result of copious hæmorrhage, but seems to be of nervous origin. A shock not unlike that caused by severe accidents, as falls, strokes, etc. But, generally mingled with this sort of impression, there is profound exhaustion from loss of blood. From this state of collapse the patient may very slowly rally, until she enters a tedious and imperfect convalescence. Or, in the cases where the exhaustion from hæmorrhage is added to the great depression of the shock, the patient may be overwhelmed, and in a hour, or very few hours, her sufferings end in death. Imperfect recovery from the great effects of the first shock may enable the patient to live for several days, and at last, in five to ten days, die. In case the patient recovers from the first symptoms, after some weeks she may regain a fair degree of health, and retain it, or even improve, until lactation gives place to ovulation, or until this last function supervenes upon the first. The first menstrual discharge is preceded by copious mucous evacuation, and when the menses begin they are more than ordinarily profuse, and generally before they cease amount to prostrating hæmorrhage. This hæmorrhage is repeated monthly, more frequently, or is continuous, while the leucorrhœal discharges become very profuse. Functional derangement of other and important organs enters the list of morbid impressions; the bowels are constipated, the heart palpitates, the stomach cannot digest with its former vigor and completeness, the head aches, the eyes become weak; the disposition of the patient changes; the memory fails her; she is pale, cold, and anæmic; in short, she enters a decadence that is continuous, until, after several months, or a few years, she is exhausted and dies. Although this is the course usually pursued by cases of inversion, it must be remembered that there is a class of them in which the patients do not suffer even much inconvenience, and their condition is discovered only by accident during their life, or on the dissecting-table.

Diagnosis.

When the symptoms present themselves so as to awaken suspicion, the diagnosis of recent cases may be made out quite clearly, by the descent of a tumor into or entirely through the vagina, and the absence of the uterine globe above the symphysis pubis. The diagnosis, after a few days or weeks have elapsed, and the case becomes chronic, is not quite so simple and ready. The tumor is felt in the vagina, and is more sensitive than polypus. It is easily surrounded by the fingers, and by introducing two fingers in the vagina to the upper end of the tumor, the depression formed by the junction of the vagina and uterus may generally be easily surveyed. If this is not entirely satisfactory, the sound should be introduced into the vagina before the fingers are withdrawn, and, guided by them, be made to sink as deeply into this depression as it will go without too much force. If the uterus is inverted, the probe will not pass beyond the fingers any distance, but if the vaginal tumor be a polypus, the sound will pass up at some point some inches above the fingers into the uterine cavity. The operator may test the position of the uterus in another way, by introducing the finger high up into the rectum, so that the end may reach above the tumor, and retaining it there, he may pass a catheter or sound into the bladder, and approximate the two; if the womb is in place, its thickness will be perceived interposed between the two, but if inverted, the extremity of the catheter can be brought down upon the finger, with nothing but the membranous walls of the bladder and rectum intervening.

Prognosis.

No more serious complication of labor can occur than inversion of the uterus. The danger is great and imminent; in a considerable majority of cases proving fatal, the patient dies within a few hours. Mr. Crosse says: "In seventy-two out of one hundred and nine fatal cases, the patients died within a few hours, eight of the remainder within a week, and six more within four weeks; another at five months, the result of an operation which had an unsuccessful issue, one died at eight months, three at nine months, and the others at various periods of from one to twenty years." (*West.*) Death in the first place soon after delivery seems to be the result of rapid exhaustion of the vital forces by the terrible shock to the nervous system and the profuse hæmorrhage that often complicates it. Death in subsequent times, however remote in the chronic form, is brought about by impairment of the vital functions by the same means, operating more slowly but as surely. The patient dies from exhaustion in both forms. Accordingly, we find that while inflammation has something to do in affecting the issue in rare instances, those cases in which there is no uncommon hæmorrhage or leucorrhœal discharge last longest, and sometimes do not prove fatal at all, the patient enjoying fair health for many years. I know one patient, fifty-six years of age, whose uterus was inverted sixteen years ago, and yet remains in that condition, as I have verified by examination, who is in the enjoyment of as good health as the majority of women of her time of life.

Treatment.

The management of recent cases will be the easier the sooner after the accident it is commenced. Its reduction is generally successfully accomplished within the first hour or two if intelligently attempted. It is more difficult as time elapses, but it should *never* be considered impracticable until proper and persevering efforts have been made. The first item for consideration and action is to dispose of an attached placenta when the uterus has not detached it before, during, or after its descent. If the placenta is wholly adherent, its attachment should in nowise be interfered with until the uterus is returned to its former position; but if it is partially detached, it should be immediately separated by gently "peeling" it off with the fingers. This instruction has reference solely to the prevention or lessening the amount of hæmorrhage. If the placenta is attached throughout, the hæmorrhage will be trifling; if partially separated, the condition most likely to be accompanied with fatal hæmorrhage exists,—relaxation of the uterus and partial separation of the placenta. It is well known that sufficient contraction of the uterus will separate the placenta, and when not contracted enough to do so, it is in too lax a state for us to desire its detachment. If the placenta is partially separated, the completion of it by the fingers, as in the case when included in the uterus, will enable and stimulate this organ to contraction, and thus to the suppression of the hæmorrhage. I do not think the question of convenience of return, or the possibility of being foiled in the reduction by the continued attachment, should be entertained. The want of contraction enough to throw off the placenta is an evidence of such profound inertia as to insure easy reduction of the uterus.

It being decided what course to pursue with the placenta, immediate efforts should be made to revert. And before beginning these efforts, we should remind ourselves of some facts in the case that are apt to be lost sight of in the hurry and confusion of such an appalling occasion. One fact is, that immediately after the occurrence of the accident, the uterus is in the same flaccid condition in which it was incapable of resisting the action of the cause; another is, that it soon begins to contract, becomes firm, and, consequently, more difficult to affect by counter influences; and a third, that the more the uterus is stimulated, by handling or otherwise, the sooner and more firm the contraction becomes, and, consequently, the greater difficulty in reduction.

No operator has complained to us of the bulk being too great to return, but all of the resistance caused by contraction. The experience of Dr. Meigs is conclusive on this point. He found that upon attempting to reduce the size of the uterus, by squeezing it to expel the blood, he caused it to contract, and it became so hard as to resist his efforts to push it up within the os; but as soon as he pressed upon the fundus he would depress it, or rather elevate it, until, by continuing pressure, he made it ascend first into the body, and through it into the neck, and finally up to its proper place. Dr. White, of Buffalo, although he did not mention with the same distinctness the effects of the two sorts of pressure, was enabled, by indenting first and then following up the vantage, finally to push the fundus up the same way through the os and body of the uterus after he had in vain tried to reduce it by squeezing, etc. Dr. White's case was reduced in this way eight days after delivery. And I must be allowed to express the opinion, that it increases the difficulties in recent cases of inversion to try to lessen the bulk of the uterus. A great bulk indicates a flabby, reducible state, and is favorable to success instead of otherwise. Do not squeeze the uterus to lessen its size in these cases.

The two cases I have referred to, of Drs. White and Meigs, so intelligently and deliberately observed, and so clearly described, furnish us with more intelligible means of arriving at correct ideas of the steps by which inversion of the uterus is reversed, than any I am able to find on record. They both concur in showing the usefulness of one hand in the vagina to steady the uterus, and direct the force applied to the fundus by the other hand, and the injurious effects of compressing the body of the organ. The most appropriate mode of operating in recent inversion, therefore, is to introduce the left hand into the vagina behind the uterus, while with the fingers of the right the fundus is indented, and gently, but steadily and perseveringly, reverted entirely above the os and cervix, until it assumes the globular shape and proper position above the symphysis. If the fingers of the right hand cannot be used to advantage, or are too weak to accomplish the desired elevation, we may use an instrument resorted to by Dr. White, a large elastic rectum bougie, or by Dr. Beers, shaped like the end of a walking-cane, with a round smooth head upon a staff. The indentation and elevation may be more efficiently effected by this latter instrument, perhaps.

The fact cannot be too forcibly impressed upon our minds, in undertaking this operation, that gentle firmness is the proper expression for the force to be employed. Perseverance, instead of violence, is both more certain, successful, and secure, in overcoming the resistance of muscular fibre anywhere. This is especially true with the uterus, the strongest muscle in the body. As nearly as may be, we should act in the absence of uterine contractions. During and after the time we are attempting the return of the organ, the strength of the patient must be supported by stimulants, tonics, and nutrients. Brandy will, perhaps, serve best to restore the circulation and heat; it may be aided by the use of the aromatic spirits of ammonia and laudanum. In addition to the stimulant and supporting influence which laudanum exerts, it allays the irritable condition, so frequently present, of the stomach, the uterus, etc. After the urgency of the symptoms has passed by, the tincture of iron, quinia, beef essence, and nutritious diet generally, will be necessary to restore the impaired condition of the vital energies. The energy with which the stimulants are to be urged during the shock must be regulated by the urgency of the danger. Large doses of brandy, laudanum, and spirits of ammonia will not only be borne, but often be called for to meet the symptoms.

The Treatment of the Chronic Form

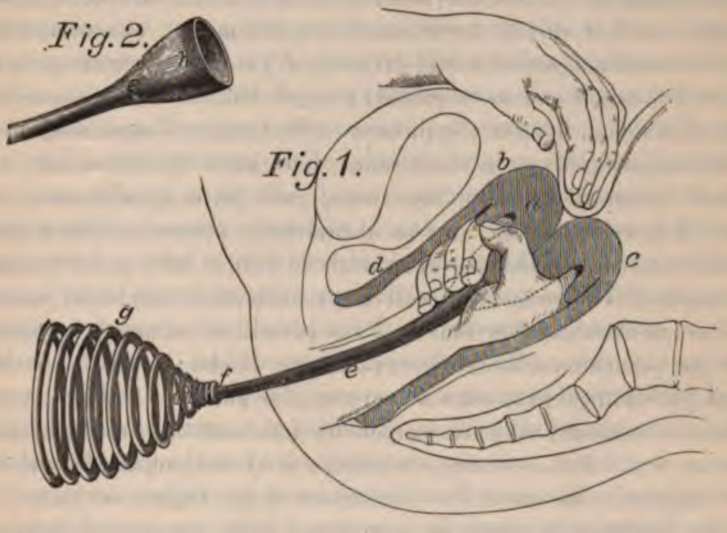
Is palliative and curative. The palliative is for the purpose, as far as possible, to check the drain which is so constantly exhausting the patient, to support the system as well as we can, and to use any other means suggested by the circumstances for the relief of distressing symptoms.

The hæmorrhage is from the mucous membrane of the uterus, its outer surface as it lies in the vagina, as also the profuse mucous discharge. I think much may be done to moderate, if not stop, these evacuations by astringents introduced into the vagina, so as to surround and lie in contact with the uterus. Pledgets of lint, saturated with the persul. of iron, passed up into the vagina, and allowed to remain on the bleeding surface of the uterus until the bleeding ceases, will be of great service. The tinct. ferri chlorid. on lint is an excellent application for the same purpose. Other astringents may be tried in the same manner. If these should fail, the vagina may be tamponed fully with cotton, dipped in astringents or not as the physician may think best. Severe paroxysms of hæmorrhage should be carefully treated in this way until they terminate, it being desirable to save as much blood as possible. It is not necessary to suggest to the intelligent reader the necessity of rest in the horizontal position. Between these paroxysms the patient should use astringent injections of concentrated strength, saturated solutions of alum, acetate of lead, tannin, etc., with a view to condense the mucous membrane, and render it less vascular, and in this way abate the urgency of the losses. The tinct. ferri. chl., one part to four of water, twice or thrice a day, will have an efficient astringent effect upon the uterus. When the organ extends through the vulva, it is irritated by contact with the limbs and clothing, and it is very desirable to return it into the vagina, and keep it within that cavity. The gum-elastic air-pessary, supported by a **T** bandage, will keep it in the vagina, and may render it more easy of a radical cure, by reduction or reversion. I would urge the attendant to personal attention to this treatment, to such an extent, at least, as is necessary to have it efficiently tried. Very few patients have the intelligence to appreciate the importance of it, or to know when proper trial of it has been made.

The radical treatment has for its objects either a restoration of the organ or its amputation and removal. So far as we can judge, although both operations are attended with danger, that of amputation the more. And I think it clearly the duty of the practitioner, when driven to a choice between the two, to give preference to attempts at restoration. We have not only greater safety as an argument in favor of it, but successful restoration reinstates the patient in all her sexual capacities, while amputation, if not disastrous in other respects, renders her forever sexually neuter. It is to be hoped that before long the operation of amputation will be regarded as unjustifiable, because of the certainty of restoration. Great improvement in our means and the mode of effecting this must be made, however, before this conclusion can be reached. There is no longer room for doubting that restoration of the inverted uterus occurs spontaneously. I think it is proven by the case of Dr. Hatch, published in Dr. Meigs's *Obstetrics*. The case of Madame Beauchardat, published by Baudelocque, is also, I think, conclusive on the point of restoration. Other cases, less clearly and circumstantially reported, may be found scattered through medical literature for the last century. There are two methods, if they may be so denominated, that have been successful in reducing chronic inversion of the uterus. Two representative cases are published in the *American Journal of Medical Sciences* for July, 1858; one by Professor White, of Buffalo (it was his second case), and one by Dr. Tyler Smith, of London. It will be observed, by examining the reports of these cases, that the restoration began by the cervix passing through the os uteri first, then the body, and finally the fundus. This is different from what I think is the common mode of restoration in recent cases. The operation for reversion in Dr. White's second case was completed, we are led to suppose, in something more than an hour, and at one sitting. The uterus had been inverted five months. Dr. White operated by introducing the hand into the vagina while the patient was in a state of anæsthesia from chloroform, squeezing the uterus so as to lessen the size as much as possible, and at the same time pressing the organ upwards by means of the large rectum bougie. Success followed a somewhat protracted manipulation. The uterus was restored by the lips of the os uteri beginning to fold outward, and the neck to pass up through this opening, next the body, and afterwards the fundus. There is nothing in this case said about the fundus being indented from beginning to end. This is no more than might be expected by considering the anatomical circumstances. The fundus and corpus uteri are firmer and more solid than the cervix, and hence less likely to yield to the same amount of force. The force applied to the fundus, when the organ is strongly pressed upward, acts more efficiently upon the cervix than any other part, from the fact that the vagina, attached all around the mouth, has not merely the effect of resisting the upward pressure of the uterus, but, being upon the outer surface, it initiates and keeps up the funnel-shape expansion of the os necessary to permit the other parts to pass through it, as well as to draw it down over the part entering it from below.

I believe that, in some respects, this is the best manner of operating for immediate restoration, yet one thing done seems to me to be superfluous, if not mischievous, viz., the squeezing the uterus. Dr. Sims recommends that the uterus be supported by one hand above the pubis to prevent too great extension upon the vagina. While the uterus is being pushed up from below, the cup-shaped cavity formed by the inverted cervix may be felt if we forcibly press the fingers down into the pelvis from above over the pubis. This manipulation affords us valuable aid in forming our diagnosis, while it gives the opportunity of assisting in the reversion. The great thing to be gained is the commencement. After the neck is one-half reverted the restoration proceeds with more rapidity and ease than before until complete. A better instrument than the bougie used by Dr. White would be a cup on a strong handle, large enough to safely lodge the fundus of the uterus. Dr. White now uses what he calls the *repositor*. The figure shows its action with sufficient clearness to require no extended explanation of its use. The steps in the operation for immediate restoration are, first to introduce the hand into the vagina, and, embracing the uterus with it, hold the organ steady, with the fundus and cervix nearly parallel with the axis of the superior strait; second, place the fundus of the uterus in the cup of the instrument held by the other hand, and then press gently upward, increasing the firmness of it until it is as great as the parts will bear without violence, and continuing it with such force until the parts yield and pass up. The time required may be considerable, and it is an object to continue it for a long time, increasing the pressure so slowly as not to be perceived, except by comparing it at considerable intervals. The patient should be under the influence of chloroform to insensibility, and placed on her back, with the limbs widely separated across the bed, and with the hips very near it; or, what would be better, an operating table of convenient height, about two feet wide and five long. Greater facility would be afforded for attendants by such a table. The surgeon should kneel or seat himself in front of the patient, so as to have free use of both hands and perfect command of the parts.

FIG. 133. FIG. 134.



The second mode of restoring the inverted uterus, as practiced by Dr. Tyler Smith, is to apply the force so gradually as to require several days for the completion of it. The means used were, first, the frequent introduction—I think twice a day—of the hand into the vagina to squeeze the uterus; and, second, to keep a gum-elastic air-bag distended in the vagina, which constantly pressed the fundus upward, certainly, however, with no great force. He succeeded in restoring a uterus that had been inverted for fifteen years. With proper apparatus I should very much prefer this gradual method, as requiring less violence, being less hazardous, and perhaps less painful.

A sufficient number of cases have been successfully treated by this means to justify giving it a fair trial. Having succeeded in three cases in reducing with the elastic bag, I am more favorably impressed with its efficiency than Dr. White seems to be. The reduction was effected in from five to eight days, without giving the patient pain enough to interfere with her sleep, or causing her any serious inconvenience. Each day showed advances; the first, relaxation of the rigid neck; the next, shortening of the displaced uterus; and each day after exhibited gradual improvement until the restoration was found to be complete. I am convinced that in many, if not most, of the simple cases of chronic inversion the reposition may be accomplished by this method, and I would certainly try it before resorting to the more hazardous and more painful plan of Dr. White. Success with the elastic bag, however, requires a careful study of each case, and a watchful adaptation of the means. The kind of instrument is of much importance. The best shape, perhaps, is quadrilateral. It should be strong enough to bear considerable pressure without materially altering its shape, and furnished with a tube and very tight stopcock. The instrument should be distended with water instead of air, as there are few that will not permit air to escape in greater or less quantities. The chances of success will be increased by a firm and well-shaped perinæum to support the pressure, and by its own elasticity adding to the efficiency of the instrument. When the perinæum is deficient, we may compensate it by well-adjusted mechanical support. The more firm the tissues of the vagina the better.

The instrument should be introduced in an empty condition, and placed well back in the vagina, and the water forced into it until moderately distended. We must then carefuly examine the relationship between it and the uterus, and see that the latter is pressed upward in the direction of the axis of the superior strait. If this is not the case, we may be able to place the uterus in the right position by moving it with the finger. If this cannot be done, the bags should be emptied and changed until right. If the shape of the instrument is not properly adapted to the vagina, it should be replaced by another. By exercising due care in selecting and adjusting the instrument, we shall be able to get the force exerted in the right direction. When satisfied that the instrument is properly adjusted, we should inject water into it, and distend it as much as the patient can bear without decided pain. It will not be necessary to remove it more than once in twenty-four hours, but it ought to be examined in reference to the degree of distension, and if it should continue tense, and the patient feels no more discomfort from it, we ought to inject more water until the patient experiences slight uneasiness from the pressure. Once in twenty-four hours the water may be allowed to escape, and the instruments be removed, the vagina cleansed, and the parts thoroughly examined. If we are producing any impression on the rigid cervix, the relaxation will be perceptible by the facility with which the uterus will move upward. The instrument should be carefully readjusted and again distended. On the second removal of the bag I think, usually, we may expect to discover decided progress in the process of restoration. I do not believe it judicious to manipulate and squeeze the uterus, with a view to lessen the blood in it, every time we remove the elastic bag, and would sedulously abstain from anything of the kind, believing that the reaction after the withdrawal of the hand would engorge the vessels of the organ. The daily removal of the instrument, cleansing of the vagina, and readjustment must be continued until the uterus resumes its proper position, or until we find we cannot succeed by this plan. Judging from my own observation, and the cases I have seen recorded, I should expect success to follow between the fifth and the eighth days. But efforts may be continued much longer than this if necessary. As soon as the fundus has passed into the cervix, it will spontaneously resume its proper position, because the resistance to its doing so is removed; but if this should not occur, a rectal bougie may be placed against it and sufficient pressure exerted to rectify it completely.

The pressure of this elastic bag when properly managed is just the kind desired, and the degree may be made very considerable. When the bag is of the right size and form the uterus is pressed upward in such a manner as to place the vaginial attachments upon the stretch, and cause them to draw open the cervical cavity, and this tension is increased by the dilatation of the upper portion of the vagina in every direction. It thus acts as a dilator as well as repositor. And although the degree of pressure upward is not so great as may be made by the repositor of Dr. White, or by the hand, its steadiness of action, and the great length of time it may be continued, more than compensates in the end for its lack of violent force. We all are acquainted with the efficiency of moderate but long-continued traction upon fibrous tissue, in cases of long-standing dislocation.

I will here present a case which has recently come under my observation:

December 24th, 1878.—Mrs. M., Irish, aged twenty-six years, was brought to me with inversion of the uterus, which had taken place at the time of her first labor, fourteen months before. I obtained a very imperfect history of the case, but so far as I could learn nothing unusual occurred during pregnancy, and when the labor began the patient was in the enjoyment of robust health. The first and second stages of labor were normal, and together lasted six hours. During the third stage hæmorrhage was alarming, and the succeeding prostration very great. The patient could give me no intelligent account of the mode of delivering the placenta, or of the duration of the third stage. The only recollection of it was that she suffered from great pain and weakness. The accident was not discovered at the time, and when, after the lapse of some weeks, the attention of the practitioner was called to the unusual condition of the contents of the vagina, he said: "She must have a polypus or something else." He either was not aware of what had occurred or did not wish to have the true condition known.

Astringent injections were used and stimulants and tonics given.

The patient gradually rallied, and during the first year was seen by a number of physicians, and many opinions were expressed and methods of cure tried. No benefit resulting from treatment, she came under the care of Dr. White, of Bloomington, who recognized the true condition of the patient, and made a very judicious and prolonged effort to reduce the uterus by the forcible method and failed. He then advised her to visit me for further treatment.

When she arrived she was very anæmic and exhausted. She was constantly discharging blood and mucus, and at the time of her menses flowed profusely. There was great tenderness and sensitiveness of the vagina, uterus, and lower portion of the abdomen. The pulse was weak and about one hundred to the minute. She had a poor appetite and was obstinately constipated.

An examination confirmed the diagnosis of Dr. White. The vagina was very capacious, and depending from its roof was a small, very firm uterus. The involution seemed to have been carried beyond the ordinary degree. It was in a state of hyper-involution. It was completely inverted. The labia could be felt forming a thin border, completely surrounding the cervix, with the likeness of a fringe, the edge pointing upwards. The uterus was so firm and condensed that it resisted every effort to elevate it. It could be drawn down somewhat, bringing with it a pouch of the upper wall of the vagina. There was considerable sensitiveness of the iliac and hypogastric regions, but no tumefactions, induration, or other evidence of the products of inflammation. A mild cathartic was administered, followed by the tincture of iron and quinine, and on Christmas day the treatment for reduction was commenced. An elastic bag, four inches long, and when distended three inches in diameter, with a tube attached, was selected as the main instrument. When collapsed this bag presented a quadrilateral shape, larger in the centre, and slowly tapering towards the ends. I selected a sac of this shape because it filled the vagina from the vulva to the bottom of the fornix, and when introduced one of the faces reached the fundus in such a manner that the organ would not easily slide over its sides. As the bag was slowly distended the fundus produced a depression in which it was firmly retained when the sac was filled.

I introduced this bag, while empty, so that it lay on the posterior wall of the vagina, and carefully adjusted the dependent fundus so that the body was in a line with the axis of the superior strait. Water was slowly injected until the distension produced a sense of discomfort. The distension was kept up for twenty-four hours, when the water was permitted to flow away. The instrument was removed and cleansed, and again replaced and filled. The first time it was removed an evident softening of the cervix was noticeable, and the body could be pressed slightly into it. From day to day the softening and dilatation became greater, and upon the removal of the instrument advance was ascertainable. Upon removing the bag, on the seventh day, I found that the uterus was in a state of complete inversion, and all progress seemingly lost. With the finger, however, I could easily press the fundus entirely into the dilated cervix, thus assuring myself that the work of reduction was almost complete. A more careful adjustment and careful distension of the bag were effected, and on the removal of the instrument on the eight day it was found that the fundus had mounted to its normal position. The sound was introduced two and a half inches. This patient improved in strength and became more comfortable from the commencement of the treatment to the end. After the first three days she was up during a part of the day, and on the seventh and eighth was about her room, and, in addition to keeping her room in order, gave her child all the attention it needed.

I have no doubt that she was perfectly truthful in her assertion that the treatment gave her no inconvenience except at the time and for a few moments each time after the adjustment of the instrument. There was no time when I felt the least uneasiness about the effects of the pressure, or was under the necessity of giving anodynes for the relief of pain; nor did the presence of the instrument prevent the free and comfortable evacuation of bladder and rectum. In fact, the patient improved from the time she was placed under treatment.

Notwithstanding the important improvements of Dr. J. P. White, who deserves more credit for his success and teaching in inversion than any other man, and Dr. Tyler Smith's success in the use of the gum-elastic bag, there will yet remain cases in which the uterus cannot be restored to its natural position and relations. Inversion, complicated with several fibrous tumors of the body or fundus, will resist ordinary methods of reduction, and, no doubt, cases in which the causes of difficulty cannot be precisely discovered will occasionally be found unmanageable. What shall be done with such? The necessity for any operation that involves the life of a patient, already in great danger, should be clearly determined by the circumstances of the case and with ample counsel. If the patient's health is growing worse and her strength being exhausted by great discharges or persistent inflammation, relief should be attempted at all hazard. If, however, the woman is enjoying fair health, or if the symptoms that usually harass her after the accident of inversion are improving, any operative procedure beyond efforts at reduction is not justifiable.

In cases where restoration is proven to be impossible by proper, prolonged, and repeated efforts, or the uterus is so enlarged by morbid growths as to make it obviously useless to try reduction, and the conditions demand relief, amputation is the last resort. In a *résumé* found in the *American Journal of Obstetrics*, August, 1868, translated from the German, we have fifty-eight cases reported of amputation of the inverted uterus; eighteen terminated fatally, forty recovered. This is a large mortality, but probably the fatality will become proportionately less as all the conditions of the operations are improved. The methods of amputation now practiced are essentially three:

1. Ligating and allowing the ligature to remain until it cuts through.
2. Ligating to prevent hæmorrhage, and then amputating below the ligature with the knife, scissors, or écraseur.

3. Passing the écraseur or galvano-cautery wire through the substance of the cervix without ligating.

The ligature, when properly applied, effectually prevents hæmorrhage, but it is very likely to cause inflammation, also a very formidable occurrence, and one which is the frequent cause of death. Or if it remains long enough to cause sloughing even of the amputated stump, there may arise toxæmia, resulting from the absorption of the putrid substance. The écraseur avoids this latter difficulty, but I should fear it would be an insecure guarantee against hæmorrhage in all cases. Dr. Thomas Hay, of Philadelphia, reports, in the *Medical and Surgical Reporter*, December 2d, 1871, a case in which amputation was successfully performed by the écraseur alone. Dr. McClintock, of Dublin, applied the ligature for forty-eight hours, and then removed the uterus by amputating with the écraseur in the groove formed by the ligature. Practical demonstration is the only reliable guide in important operations; we are not supplied, however, with enough examples of success by any one procedure to justify us in making a positive choice between them.

It will not be difficult to get access to the cervix for the purpose of applying the ligature or amputating. This may be done by drawing the organ down to the vulva with vulsellum forceps.

The galvano-cautery is better than all the above methods of amputation.

The wire applied as an écraseur, heated to a dull red color, and drawn slowly through the cervix, will do away with the dangers of hæmorrhage, and leave no sloughing surface from which sepsis may be generated.

CHAPTER XXIX.

DISEASED DEVIATIONS OF INVOLUTION OF THE UTERUS.

THE uterus is very much hypertrophied by the processes of gestation, so that after its contents are expelled by labor, the organ weighs from one and a half to two pounds. An atrophizing process, called involution, serves to reduce the organ to its original conditions in size and weight.

Involution is a physiological change, as much so as evolution; but not unfrequently disease invades the tissues and renders it abortive: 1st, causing it to be temporarily "delayed;" 2dly, to fall short of completion after it has been commenced; or, 3dly, to proceed entirely beyond the limits compatible with the healthy functions of the uterus, reducing it below its usual weight and size.

I mean by the term "delayed involution" to designate a condition of the uterus in which this process does not begin for a number of days—from ten to fourteen—after parturition.

The contractions which immediately succeed and continue after labor, by interrupting the circulation in the substance of the uterus, initiate that process, and by the end of a fortnight it is half finished. Should these contractions be rendered inefficient, involution is at a stand, the uterus remains large, the circulation too great for safety to the patient, and sufficient to keep up the nutrition in the muscular fibres, which are still capable of a good degree of energetic action. For a number of days the uterus is felt to be as large as a child's head, above the pubis, and not very firm.

Causes.

The most common cause of this delay is inflammation attacking the substance of the uterine walls. The inflammation may be acute, and the patient's suffering such as to demand attention, or so slight as to pass without much notice. Cases of puerperal metritis, for a week or ten days immediately succeeding delivery, not unfrequently prevent this enlarged condition of the organ.

Another cause which probably operates to prevent involution is atony of the uterine muscular fibres. The contractions are feeble, and so inefficient as to delay for a long time, and render very slow, the early stages of involution. Too early assumption of the erect posture and undue exercise on foot, keeping the bloodvessels of the uterus distended unduly, and thus overcoming the muscular contraction, are not unfrequently the causes of delayed involution.

Symptoms.

The symptoms of delayed involution, separate from the inflammation, are not always very well marked. Weight, heat, and aching in the back are the most frequent, especially if inflammation is the cause. There is always great danger, however, of a very alarming symptom while this state of the uterus exists, and that is flooding. Where the delayed involution is dependent on atony of the muscular fibres, hæmorrhage is sure to take place if the patient exerts herself considerably. As the first indication of any seriously wrong condition of the uterus, the patient is suddenly seized with copious hæmorrhage, which subsides under the influence of rest, cold, and astringents, but suddenly and unexpectedly recurs without adequate cause. When suspected, the diagnosis is not difficult by an examination with one finger of the right hand per vaginam, while with the left hand pressure is made above the pubis. The uterus, thus examined, is found to be as large as immediately after labor is ended.

The soft, uncertain condition of the uterine globe will not always enable us to discover it by placing a hand upon the lower part of the abdomen alone, but by including the organ between the two there will be no danger of mistake. If the organ retains sufficient firmness to be easily distinguished above the pubis by the single hand, there will be but little danger of hæmorrhage. The local distress will then be the only indication of the necessity of a diagnostic examination, when the greatly enlarged condition will be easily detected by the examination above directed. The fingers may be easily made to enter the mouth of the organ and move the whole mass, while the hand above will easily recognize the movement, or the hand above may be made to press it down upon the fingers below.

Prognosis.

There is imminent danger of serious, if not fatal, hæmorrhage. I have known as many as two cases of sudden fatality from flooding after the seventh day from the time of labor. It is always a serious condition, and should be watched diligently and treated efficiently. Even in cases where the delay is caused by acute inflammation great hæmorrhage may take place, although not so likely as when caused by muscular atony alone. If the delay is for a very considerable length of time the involution is pretty sure not to be completed, but the uterus remains in a state of subinvolution for an indefinite time. Very often the causes which effect delays continue to act, and finally produce subinvolution.

Treatment.

The treatment depends upon the causing conditions. If there is inflammation of the uterus the antiphlogistic measures necessary to combat it are demanded, with counter-irritation, fomentations, etc. Should atony, unattended with inflammation, exist, ergot in large doses is demanded imperatively until ergotism is brought about.

I usually give ʒss. pulv. secale corn. in infusion, every half hour, until contractions are brought about. When this is done the effect of the drug may so subside that it will be necessary to administer it again in twelve or twenty-four hours, until all disposition to relax has passed away. When atony and the inflammatory condition coexist, which may be known by the tenderness, fever, and hæmorrhage occurring together, the ergot and other treatment should be combined. Hæmorrhage is not likely to come on until after the inflammation has pretty well subsided, and aids usually in removing the last of it.

I subjoin two cases as representatives of the two conditions of the uterus, and the mode of treating them:

Case I. This case was furnished me by Dr. S. Wickersham, of this city. He was called to Mrs. E., an Irishwoman, aged twenty-eight, in her fourth labor, May 7th, 1863, 4 o'clock P.M. She had been in labor, attended by a midwife, for the most of the day. At 1 o'clock A.M. of the 8th pains had entirely ceased, from atony or exhaustion of the uterus. Constitutional symptoms began to show the necessity for relief. The forceps were used, and the child was delivered. The placenta was delivered in due time without difficulty, and the uterus contracted well. Hæmorrhage not more than usual. The pulse was unusually frequent at and after the time of delivery. The labor was followed in two days with puerperal fever, in which the uterus and peritoneum were both involved. Up to the 20th she had improved very much, so as to be considered by the doctor as convalescent. In the early part of the day sudden and violent hæmorrhage prostrated the patient to what was at the time considered a moribund condition; but by active stimulation and external warmth to her cold extremities she rallied, and appeared to be slowly recovering. At 6 o'clock

P.M. on the 24th the hæmorrhage returned with "terrible violence," and she was thought again to be dying. Notwithstanding the most energetic use of stimulants she could hardly rally from this last attack. On the 26th, in consultation with Dr. Wickersham, I found the patient so prostrated as to leave but little hope of her recovery. Suspecting that the uterus was in a state similar to what is found immediately after delivery, I insisted upon making an examination, which was resisted by the patient and friends. Through the kind perseverance of Dr. Wickersham I was permitted to do so. The uterus was so flaccid that I could not discover it above the pubis until after introducing the finger into the vagina and moving it about, when the fundus could be felt as high as the umbilicus, with the regular globular form. The mouth and cervix were large and flabby, and easily admitted two fingers. After this examination the indication seemed plain. Large doses of ergot were given in addition to the stimulating and supporting treatment. Hæmorrhage was very slight on the morning of the 27th. She continued to improve slowly until the 9th of June. At 5 o'clock A.M. the hæmorrhage returned, and lasted until 10 o'clock A.M., but in so moderate a degree as to produce but little effect upon the patient. I was not in attendance after the first consultation, and could not trace the steps of condensation, but after the 9th of June the hæmorrhage did not recur.

It will be seen that on the twelfth day after confinement dangerous hæmorrhage took place; that it again returned on the sixteenth day after delivery to a very alarming extent; and that after the liberal use of ergot the hæmorrhage returned but slightly. It should be noted, also, that the cessation of the hæmorrhage was sudden, and probably resulted from faintness, and that it returned as soon as the arterial reaction amounted to any considerable degree. The faintness, doubtless, was the cause of stoppage in both attacks before ergot was given, but the hæmorrhage was effectually checked by contractions caused by the ergot.

CASE II. Mrs. E. is the mother of nine children. She is thirty-three years of age, and a German Jewess. Of robust, almost athletic make and habits, she always enjoys excellent health. In the last three confinements she has almost lost her life from loss of blood, both before and after the delivery of the placenta. I attended her in the eighth labor, the last before this one. There was nothing peculiar in it until after the child was delivered, the labor having lasted but about four hours. The pains were ordinarily vigorous and propulsive. The liquor amnii was not evacuated until ten minutes before the head was distending the labia. After the child was expelled the uterus did not contract thoroughly. It seemed large and rather soft. This state lasted for half an hour, when a feeble contraction detached but did not expel the placenta. From this time hæmorrhage became excessive. I waited for half an hour—using friction, kneading, and pressure over the uterus, with application of ice to the vulva—for contraction of the uterus and expulsion of the placenta, but although there were occasional pains, they were so feeble as to produce no effect upon the hæmorrhage. About this time the ergot I had sent for arrived, and I gave immediately ʒss. in a little wine and water. Fearing the prostration which was rapidly coming over the patient, I introduced my hand into the uterus, grasped the placenta, and irritated the organ by moving the whole around in it. This brought on contractions enough to expel my hand and placenta, and deluge the bed with coagula and fluid blood. Very soon the ergot began to act, and the hæmorrhage ceased. I give this description of her eighth labor to show her predisposition to *inertia uterina*. As the ninth labor approached, I determined I would administer the ergot as soon as the parts were well dilated, and the head began to pass the os uteri. I was sent for at 8 o'clock P.M., June 30th, 1864, to attend her. I found the pains active and the os uteri fully dilated, and the membranes distending the labia. I at once gave her ergot ʒss. in infusion, making her swallow the ergot as well as the water. This was repeated in half an hour. By this time ergotism was fairly established. In three-quarters of an hour from the time I arrived the child was born, and in a few minutes the placenta was expelled from the uterus into the vagina whence it was removed. No hæmorrhage followed. The uterus was well contracted. I considered her condition very favorable, and at the end of another hour took my leave. Her condition for the first forty-eight hours was in no respect unusual, except that the lochial discharge was rather free. From this time I saw but little of her until the 10th of July. I returned from the country at 5 o'clock P.M., and found she had been flooding since early in the morning, not very greatly, but sufficient to begin to produce faintness. The uterus could be felt above the symphysis pubis as large as a child's head, and not very hard. I ordered cold to the pubis, and twenty drops of aromatic sul. acid in some water every four hours, expecting soon to have the hæmorrhage checked; but to my surprise, at 8 o'clock on the 11th, the hæmorrhage still continued, being but slightly moderated by the means used. I now ordered two teaspoonfuls of vin. ergoti every half hour until the hæmorrhage ceased. But the nurse said that the "second dose put her in so much pain and caused such large clots of blood to come from her that she dare not give it again." The hæmorrhage ceased entirely from this time until the afternoon of the 13th, when it returned with considerable violence. The ergot was again given, and from this time forward the patient had a favorable convalescence, and is now in the enjoyment of good health.

Subinvolution of the Uterus.

To understand subinvolution in its principal bearings it will be necessary to discuss more at length the subject of involution itself. I think that involution of menstruation plays a much more important part in the structural diseases of the uterus than we have been inclined to attribute to it. It will not be considered irrelevant therefore to take a glance at the subject, as involution presents itself in menstruation as well as in pregnancy.

In the healthy uterus, what may be called trophic changes are constantly going on, from the beginning of menstruation to the menopause. The circulation of the uterus is increased in quantity from the cessation of one menstrual crisis to the beginning of the next. During the days of the flow the afflux of blood subsides to the lowest amount.

From the cessation of the monthly flow there is an increase of solid tissue in the uterus until the beginning of the next menstrual flow, during which time there is involution or an elimination of solid tissue, notably the mucous membrane of the cavity.

These processes of afflux of blood and accretion of tissue may be, and often are, prolonged, and pass into what is known as congestion of the uterus.

When this round of monthly changes is interrupted by pregnancy, processes similar in character on a much larger scale are accomplished. The afflux of blood and increment of tissue do not attain their maximum until the end of gestation. The contents of the uterus is expelled, and then begin the changes called involution, the object of which is the elimination of the superfluous circulation and solid tissues, until the uterus returns to its menstrual status.

The prolongation or arrest of this is subinvolution.

Post-partum involution is no doubt initiated, if it is not completed, through the agency of muscular contractions. The large fibres which have been strong enough to expel the fœtus, placenta, and membranes, continue to contract, and in doing so compress the vessels, and thus cut off at once a large quantity of the blood circulating in the uterus. As a result of this some of the fibres are deficiently supplied with nutritive elements, and undergo fatty degeneration. The granular fatty material is absorbed and the general bulk of the organ diminished. Further contraction is thus rendered possible, when more fibres disappear in the same way until the process of involution is finished. The length of time required is, I think, much longer than is generally supposed, seldom in one month, often not in three months, and sometimes morbid causes prevent it from ever being accomplished. The uterus then remains more vascular and bulky than normal, or is in a state of subinvolution.

In both post-menstrual and post-partum subinvolution this simple vascular condition does not continue for any great length of time. Hyperæmia is often a mischievous condition, and sooner or later causes changes in the organization of the viscus in which it exists. In subinvolution there is at first hyperæmia, with hypertrophy of the fibrous, vascular, and nervous tissues. These solid portions of the organ degenerate, not into a fatty substance that may be absorbed, but into fibrous tissue of a low organization.

Either as the effect of exudation from the capillaries, or the slow absorption of the more vitalized molecules of the muscular fibres, or both, there comes to be an undue amount of connective tissue. The transition from the more muscular and highly vitalized state of the uterus to this one of induration may be accomplished in a few months, or it may require the lapse of years. When it is complete many of the symptoms that indicated the state of recent subinvolution are replaced by others of a different kind; especially do the bloody discharges from the uterus become less than normal.

Subinvolution is a term then which embraces different pathological conditions; or, perhaps, it would be expressing the facts better to say, that several distinct pathological conditions of the uterus result from subinvolution. This last statement will apply equally to menstrual subinvolution as to the post-partum.

We ought not to lose sight of the fact that all the physiological and some of the pathological changes occurring in the uterus are to a great extent coincidental with, if not the consequences of, the changes going on in the ovaries,—the organs that dominate the whole genital system.

During ovulation the menstrual hypertrophy takes place; at the time of the discharge of the ovum menstrual involution occurs.

During the development of the ovum in the uterus, ovarian hypertrophy is going on; at the time of the expulsion of the ovum the processes of involution begin.

It is quite probable that after the ovum is inclosed in the uterus and gestation established, the uterus is prompted by ovarian influence to the enormous physiological and anatomical changes which go forward in it, up to the perfection of fœtal life, and afterward govern the processes of labor and involution. It is certain that the ovaries do not return to the condition in which they were, before conception, until pregnancy has terminated, nor in fact during several months of lactation.

While the generative functions of the ovaries are held in abeyance by lactation,—or, if I may express it differently, while the ovaries are engaged in the reflex duties of sustaining lactation,—they do not return to their former condition. According to my observation, involution of the uterus, ovaries, and vagina is not complete in persons who nurse their children until the ordinary term of lactation has elapsed. Looked at in this way I think involution will present different features than when viewed from a more circumscribed standpoint. We will attach more importance to the influence of the nervous system, exerted through the ovaries.

The term and process of involution extend to the changes observed in all the genital organs, the lacteal glands, the ovaries, uterus, vagina, Fallopian tubes, uterine ligaments, and perinæum. How much more susceptible to the effects of morbid causes, therefore, must be all the contents of the pelvis in the hyperæmic, hyperæsthetic, and hypertrophic conditions during the time involution is going on, and how readily the affections of one pelvic organ will influence the condition of all the others.

The genital organs constitute a separate and, in some respects, independent physiological system, governed by special nervous centres, all bound together and dominated by the ovaries, under all the physiological changes accompanying pregnancy, labor, and involution.

Causes.

Any morbid causes that prolong the processes of involution may arrest the process entirely. The character of the labor may have this effect. If it has been tedious enough to produce great nervous exhaustion, the uterine fibres will be powerless to conduct the changes necessary to a speedy and perfect involution.

If the cervix is lacerated or badly contused, the consequent inflammatory reaction interrupts involution for a greater or less length of time, or perhaps for all time.

Inflammation of the body of the uterus resulting from severe labor or exposure may do the same thing. General and special causes not dependent upon labor often act so as to bar the completion of involution. Some of these causes are general debility; that is an impoverished condition of the blood, lack of nervous energy, a want of the powers of endurance, cold acting through the nervous system upon the circulation of the uterus post-partum or during menstrual congestion, the excitement of anger, fevers, or the depression of fear, etc.

Special causes operate through the genital nervous centres upon the uterus directly, as venereal excitement from unnatural lascivious practices, coition during or just before menstruation and within the month after labor, libidinous literature, and exciting exhibitions.

Diseases in the surrounding organs by keeping up nervous and vascular excitement, ulceration, fissure, and hæmorrhoids of the rectum, specific vaginal inflammation, laceration of the perinæum, urethral and vesical inflammation, displacements of the uterus, etc., all tend to produce this effect.

Frequency of its Occurrence.

Without exaggerating the importance of subinvolution, I believe it would be correct to say, that more of the chronic congestions of the uterus originate in puerperal and menstrual subinvolution as here explained than in any other one condition.

By taking the puerperal and menstrual involution as a fundamental and almost constantly present condition of the pelvic organs for a basis, I think we can better explain the mode of operation of exciting causes in producing chronic diseases than by any other hypothetical method. Certain it is, that there is no other organ in the body so prone to lesions of circulation and their consequences as the uterus, and that the reason why this is the case must reside in the anatomy and functions of the organ.

It is an organ, the very nature of whose condition is one of unceasing fluctuation of vascularity and nervous susceptibility.

Symptoms and Diagnosis.

The general symptoms of subinvolution are in no respects distinctive. All the reflex symptoms spoken of as uterine symptoms, or symptoms of uterine disease, may exist in patients the subjects of this condition; neither do the local symptoms guide us with certainty to a correct diagnosis. In the earlier months of subinvolution, in fact for an indefinite term, metrorrhagia is a frequent symptom, and in some instances continues as long as the disease lasts. It represents what may be termed the vascular stage of subinvolution. In a great many cases of subinvolution after a certain time, which also is very indefinite, the bloody discharge from the uterus becomes less copious, and occasionally entirely ceases. This diminution of the flow indicates the supervention of the fibrino-plastic stage, or a condition in which the vascularity of the uterus is diminished while the solid tissue is increased. Leucorrhœa is generally present or absent under the same conditions that govern the flow of blood.

Diagnosis.

The diagnosis must be made up from the history and physical examinations. If the sufferings of the patient date from an abortion, or labor at full term, and in addition to the general and local symptoms of uterine disease there is or has been for months too copious or too frequent menstrual discharges, or hæmorrhages intervening between the regular periods, the presumption is that there is subinvolution, or at least that the symptoms were at first those of that condition. One of the most constant appreciable conditions of subinvolution is the large size of the uterus. This may be ascertained by bimanual examination and the introduction of the sound.

When the uterus is lifted up by the fingers in the vagina, the fundus will be more easily felt by the hand above, and the sound will pass farther beyond the normal depth into the cavity than when the organ is of a normal size.

The shape of the uterus is generally still that of the post-partum organ. It is proportionately thicker through its antero-posterior diameter. The enlargement, therefore, is different from enlargements from other conditions.

The shape is often modified by retroflexions and lacerations of the cervix. When retroflexed without laceration, the fundus and body are much larger proportionately as compared with the cervix. When the cervix is badly lacerated, it is enlarged. The appearances in this respect are sometimes deceptive when the labia are widely separated.

When examined through the speculum the color is deeper than natural, the mouth patulous, the cervix large and often ulcerated. Generally, also, there is copious albuminoid mucus hanging from the os uteri, sometimes of an amber color, from the admixture of pus-corpuscles. When the cervix is lacerated, the mucous membrane of the cervical cavity is exposed, and presents a papillary or fungoid appearance.

These are the appearances in the vascular stage of subinvolution. After this has passed, and the fibrino-plastic change has taken place, the cervix and body will feel hard to the touch; sometimes the induration in such cases is very marked indeed. While the induration is generally uniform with respect to the cervical circle, and extends entirely around, at other times it is confined to one of the lips. Then the color is often not increased, and the surface is smooth and covered with cicatricial tissue instead of granulations or fungoid bodies.

Prognosis.

During the vascular stage of subinvolution, and while the hypertrophied fibres of the uterus retain their muscular character, we may hope to succeed in restoring the normal condition of the organ. We must remember, however, that metrorrhagia, indicating great vascularity of the uterus, is no evidence that the fibres are not greatly changed or replaced by non-contractile tissue, and consequently the prognosis should be guarded. The longer the time the case has lasted, the greater the probabilities are that the fibres are replaced by connective tissue.

After this vascular and hypertrophic condition of the muscular fibres have passed away, and there has been extensive fibrino-plastic deposit in the walls of the uterus, the probabilities of a cure are very remote. The uterus is then hard, inelastic, its tissues permeated by few vessels, and the nerves diminished, if not entirely absent.

Treatment.

The preventive treatment should begin during pregnancy. Every means necessary to place the patient in good health, both generally and locally, must be resorted to,—exercise in the open air on foot, if at all practicable, and domestic employment or exercise of like character.

The habits of the patient should be regulated with a view to the development of the muscles of the entire body, while her diet should be abundant in quantity and of the most nutritious quality.

It is not my purpose at this time to do more than to call the attention of the obstetrician to the subject of preparing patients for the great task of passing safely through labor. During labor everything should be conducted with the view of preserving the integrity of all the soft parts, because, as before intimated, damage to any of the parts concerned in labor is pretty sure to be followed by subinvolution.

The more physiological a labor is, and the more skilfully conducted, the less the tendency to subinvolution.

After labor complete contraction should be brought about, and maintained, not by mechanical irritation, but, if need be, by the use of ergot and vaginal injections of hot water. These latter will stimulate the pelvic nerves and prompt the uterus to contraction, and by their cleansing effects promote the repair of every damage that the soft parts may have sustained. Above all things, a sufficient amount of absolute rest must be enjoined to insure recovery of the viscera.

The most assiduous attention should be especially given to control all inflammations that follow labor.

From the immense number of gynæcological cases traceable to labor, it is to be feared that some of the modern innovations in the practice of midwifery are not improvements.

More attention and care in conducting patients through cases of abortion and premature labor should be practiced than is usually done.

Abortion is looked upon by the patients themselves as a small matter, and it is very difficult to induce them to give the necessary time and care to themselves. Physicians know that it is a more disastrous process than labor at full term, and they will do service, therefore, by enforcing proper measures, whenever it is practicable, to insure good recovery from it.

After the patient has passed from the hands of the accoucheur to those of the gynæcologist the treatment of subinvolution will be governed by the conditions in each case. Until the muscular fibres have lost their power of contraction, ergot, strychnia, quinine, and iron, with good, nutritious diet and exercise in the open air, will be the general remedies most efficacious.

Ergot, given in moderate doses, perseveringly administered, is a very powerful means of supplementing the natural contractions. It is not applicable to cases, however, where there is inflammatory excitement in the uterine substances, and should be withheld until, by alteratives, counter-irritants, and rest, that condition is removed. When this inflammatory condition is not present the ergot and tonics, judiciously administered, will co-operate well in the accomplishment of the general result. However, gynæcologists do not often see these cases until the contractility of the fibres has been very much impaired, if not entirely lost. In most cases, even thus late, the ergot and tonics will have some good effect.

In chronic cases the local treatment is of prime importance; and the first thing to be thought of is the removal of any cause of increased vascularity that may be found associated with it. If there is laceration of the cervix or perinæum it should receive attention. If there is misplacement it must be corrected, so that the outgoing circulation may be as free as possible. When these conditions are corrected we may begin a system of local treatment that will remove the congestion, and cause the absorption of the fibrino-plastic deposits. The use of glycerin tampons and hot-water injections will be found applicable and beneficial in most cases. The glycerin cotton should be applied about every third day, and allowed to remain in the vagina about twenty-four hours.

During this time the capillary bloodvessels will be depleted by the loss of a part of the serous portion of the blood they contain, and exosmosis from the intervascular spaces will also be excited in such a manner as to empty them of their contents. This leaves the part with which the glycerin comes in contact white, shrivelled, and lessened in bulk, *i. e.*, depleted. This is not all the good effect produced by the glycerin applied to the cervix of the uterus, for the frequent removal of the serum from the intervascular spaces, which, of course, is replaced by a fresh supply from the vessels, is a very efficient means of dissolving out the fibrino-plastic material. It is, in fact, a kind of washing out of the tissue with serum derived from the minute bloodvessels; it acts, therefore, both as a depletent and a solvent.

Large hot-water injections constitute another valuable means of overcoming hyperæmia, and causing absorption of solid deposits.

But there is another class of local remedies that I believe is more serviceable than these, and that is local stimulants applied directly to the mucous membrane, such as iodine, carbolic acid, tincture of iron, acid nitrate of mercury, and many others that I might mention. In the teachings of twenty-five years ago the application of these remedies to the mucous membrane was supposed to exert only a very limited influence at the point to which they were applied, and we thought in applying nitrate of silver to an abraded or ulcerated surface the only effect it had was to heal up the abraded patch. Now we know that this is a very small part of the effect of these local applications. The vasomotor nerve supply of the whole uterus is so intimately connected that it may be considered a unit, and no part of it can be stimulated without affecting the whole. Applications made to the cervix of sufficient strength to stimulate its circulation to greater activity affect every fibre and capillary in the organ in a similar manner. When, therefore, there is chronic engorgement of the uterus the very best way to get rid of it is to stimulate the circulation by local applications to the cervix. This same principle may be turned to great advantage by stimulating its internal mucous membrane, and one of the best ways to do this is to scrape the cavity of the uterus with a dull wire curette.

This instrument may be introduced in most instances without difficulty, and passed slowly but firmly over the whole surface. In some instances, where the mucous membrane is soft, small pieces may be brought out by the instrument, but generally this is not the case.

When pieces of the mucous membrane are thus removed it would be too mechanical an explanation to say that the patient is cured because the uterus has been partly or wholly divested of its diseased membrane. It is the excitomotor influence exerted on the nerves, and the consequent effect upon the whole circulation of the organ, that is the result of its use.

It is not merely to the hæmorrhagic condition of subinvolution, but to the hypertrophic condition also, that the curette is applicable.

Dilatation with compressed sponge has often accomplished good in the same kind of cases as those to which the curette is adapted, but it is a much more hazardous measure, and should only be resorted to when the other means fail.

Hyperinvolution

Is the state of the organ in which the involution has proceeded to such a degree as to condense the tissues beyond their ordinary density. The condensation thus accomplished renders it less vascular and erectile, and the fibrous structure is paler and harder than natural. As the result of this condensation and diminution in the quantity of the circulation, the uterus as a whole is smaller and lighter than common. The degree to which hyperinvolution may be carried varies greatly; sometimes it is so slight as to require great care to distinguish it, at another the uterus is reduced to half its ordinary weight and dimensions.

Causes.

Inflammation seems here to be more concerned in the production of hyperinvolution than any other morbid process. From examinations during the progressive steps of morbid states of involution, I am inclined to think that in cases where inflammation of the mucous structures exists exclusively, or where inflammation of the mucous membrane preponderates, the involution is arrested, and hence we have subinvolution; but when the inflammation is mostly confined to the submucous tissue it proceeds to hyperinvolution.

Symptoms.

The condensation of the tissue and reduction of the vascularity of the organ always diminish the menstrual flow; and hence we have decreased menstruation in a moderate degree, and obstinate amenorrhœa in the more extreme condition. The symptoms attendant upon hyperinvolution are very similar to those enumerated in the description of chronic inflammation. They are sometimes very distressing, rendering the patient thoroughly miserable for many years. The worst cases of this form of diseased involution I have met with have been traced to inflammation resulting from abortions; but it likewise takes place as the effect of inflammation after ordinary or full term parturition.

Diagnosis.

The *diagnosis* is easy with the aid of the uterine sound. This instrument will not enter the uterus as far as it does into a healthy organ. The uterus is lighter and more easily moved, also, by the finger introduced into the vagina.

One of the almost invariable effects of hyperinvolution is sterility. I have met with a number of cases of sterility occurring soon after marriage, on account of abortion, in the first three or four months, being followed by inflammation and hyperinvolution, the patient ever afterwards remaining sterile.

The successful *treatment* of these cases requires a great deal of patience and well-adapted measures. If the change in the condition of the uterus is slight we may sometimes succeed by introducing a bougie of slippery elm bark, large enough to distend the cavity of the cervix as much as practicable, three or four days before the expected menstrual discharge. This seldom fails to increase the discharge, and if used perseveringly for several months will sometimes cure the case. The bougie should be cut out of the bark so as to be about an inch and three-quarters in length, for cases of moderate contraction, and secured by a thread before introducing it. It should be allowed to remain until the discharge begins, and then removed. If, however, it is of long standing, and the diminution in size very considerable, we will be under the necessity of using the stem-pessary recommended by Professor Simpson. It may be made of zinc and copper, in order to add the influence of galvanism.

CHAPTER XXX.

CANCER OF THE UTERUS.

"Those growths may be termed cancerous which destroy the natural structure of all the tissues, which are constitutional from their very commencement, or become so in the natural process of their development, and which, when once they have infected the constitution, if extirpated, invariably return, and conduct the person who is affected by them to inevitable destruction." (Miller, as quoted by West.)

This general definition of cancer will include all its varieties, which are usually divided into four: 1st, medullary; 2dly, epithelial; 3dly, colloid; 4thly, scirrhus. I have mentioned these varieties in the order of frequency in which they usually occur in the uterine tissues. I have not seen either a case of colloid or scirrhus in the uterus. There can be little doubt, however, that both are met with. The medullary variety is by far the most common form with which this organ is affected, the epithelial being also quite common. Cancer of the uterus is of very frequent occurrence, and the deaths from it, compared to death from the same disease occurring elsewhere in women, predominate over all other localities. It attacks the cervical portion of the uterus more frequently than all other parts of the organ, yet it begins in every other portion,—in the fundus, body, or cavities of the body or cervix. In some rare instances it runs its course to fatal results without involving all these parts. When it begins in the cervix, it usually, either gradually or suddenly, passes upward to the fundus; or if beginning in the fundus or body, it creeps downward to the os tincæ. I have seen two instances where the lower portion of the cervix was but slightly, if at all, changed, while all the other parts of the organ were infiltrated by cancerous deposit. The material of cancer, particularly the medullary, is deposited in the tissues, supplanting them more or less perfectly.

The tissue most commonly attacked by all the varieties except the epithelial is the connective tissue. The parts attacked are thickened and indurated, the thickening and induration being very irregular in shape and size. If one of the lips of the os uteri is hardened from cancerous deposit, the elevated points are sharp and angular, and the hardened parts terminate abruptly, and in a manner unlike the induration from any other cause. The hardening from inflammatory fibrinous deposit is more globular than angular, and less abrupt in its termination in the sound parts. If the cancerous deposit is in the body or side, on any part of the wall, it is enlarged into an irregular shape, and there are pits and points in many places.

The infiltration and induration increases for an uncertain length of time, until, perhaps, the cancerous deposit so far displaces and replaces the ordinary tissues that the nutrition of the parts is disturbed by the destruction of the bloodvessels, and sloughing takes place over a small or large space, but always over an irregular space, thus leaving a greater or less chasm. This is ulceration,—cancerous ulceration. The absorbents do not remove the parts, and thus cause ulceration, but there is sloughing and denudation by death of many minute parts, the absorbents having but little to do in the process. The sloughing causes the smell and putrilaginous character of the discharges. This process widens and deepens the chasm, sometimes quite rapidly, at others very slowly. In the case of the medullary variety, after induration and enlargement have advanced to a considerable extent in the uterus, the nutrition of the neighboring organs and tissues is disturbed, and the deposit is infiltrated into all the surrounding parts,—the bladder, the rectum, the areolar tissue by the side of the uterus, the peritoneum, in fact, into everything in the neighborhood. This general deposit is not limited by the coverings or divisions of the parts, but all become united, so that all the pelvic tissues become one agglomerated mass of cancer; or, if it take one direction more than another, the bladder and uterus may be glued together, or the rectum may be bound thus to the uterus. This disposition of the deposit very soon becomes sufficient to fix the uterus immovably in its place.

After the ulcerative process has fairly begun, it advances more or less rapidly, until much of the surrounding parts is destroyed; the bladder and uterus become one continuous cavity, and sooner or later the rectum also is laid open, and then the pelvic viscera are involved in one confused excavation, from which the putrilage of cancerous degeneration is poured out, commingled with urine, fæces, and blood.

There is quite a constant proportion between the rapidity of the destructive progress of cancer and the age of the patient. It is slower in the aged, and destroys the young patient most readily. Of three cases under observation, in which cancerous deposit began in the body or fundus of the uterus instead of the neck, two were in patients beyond the climacteric period, one being sixty-four years of age and the other fifty-seven when the symptoms first attracted their attention. The other patient was forty-three. In this last patient, simultaneously with the evidence of deposit in the body of the uterus signs of it appeared in the bladder, vagina, and clitoris, the duodenum, and in the pyloric orifice of the stomach. I always look for a more rapid degeneration of the tissues invaded by cancer in comparatively young patients.

Symptoms.

Discharges, pain, and fetor are the symptoms that usually attract our attention in cases of cancer of the uterus. When a patient complains of any of these, however, the case is generally an advanced one. Pain, perhaps, is the symptom first experienced, and is caused earlier than any other. Unfortunately, pain is so common to women —they suffer so often in the regions of the uterus and hips—that this symptom is not heeded by them until some other symptom makes its appearance. The pain is not generally intense nor troublesome until after the disease is recognized. Nor is it peculiar. It is described as lancinating, darting, twinging,—and very correctly, too,—but there is often nothing of this kind of pain during the whole course of uterine cancer.

The discharges in cancer are of three kinds, and the mixture of them in different proportions. They are: 1st, blood; 2d, limpid serum; 3d, sloughs, generally minute. The first two are not offensive to the smell when pure or mixed together, as they often are, and they only become so by being mingled with the last, by dissolving or holding in suspension or being merely mixed with greater or less pieces of dead tissue. In the earlier stages of cancer blood or serum may be, and generally is, effused, while the latter is reserved to the open or ulcerated stage. In this open or ulcerated stage all three kinds of discharges are almost always mixed together. In women who are still menstruating, the discharge first experienced is of blood. There is, at first, an increase in the amount of menstrual discharge; a little later, and blood is lost between the times of menstruation. The blood thus lost is derived from the same source as the menstrual blood,—the vessels of the mucous membrane of the corpus uteri. Later, when hæmorrhage is so constant and attended with fetor, it is effused from eroded vessels upon the ulcerated surface.

The blood in the former case is produced as the result of constant turgescence; in the latter, on account of the disintegration of tissue. Limpid, unoffensive serum is almost always observed in the cases of old women, after the menstrual period of life has passed, and generally coming from the os uteri, which may be for a long time unchanged, indicating that it comes from some distance up in the organ. In fact, if the same serum was effused from the surface of the vaginal portion of the cervix it would most likely be mixed with blood, because the parts producing it would not be sufficiently protected to insure the integrity of such frail tissue. In two remarkable instances the copious discharge of this limpid serum was, for many months, the only sign of disease presented by the patients. One of my patients, sixty-one years old, had been under the necessity of wearing napkins for six or more months before calling my attention to her condition. The discharge was so copious when I saw her for the first time that I collected about two drachms from the speculum in ten minutes. When examined it was found to resemble distilled water in appearance, it was so clear and colorless. There was no smell nor other offensive quality to it. When examined by the microscope no solid substances were found, except a very few natural epithelial scales. In a very gradual manner this transparent liquid became colored with blood. It was sometimes clear and sometimes bloody for several months before becoming fetid, and only for a few weeks before the patient died was it constantly bloody and fetid. The cervix uteri in this case was not attacked at all, and the mouth and lips of the neck were natural. The body of the uterus, as high as the fundus, was enlarged more than double its natural size, indurated, and nodulated; and, when examined after death, the walls presented the peculiar friable hardness of medullary cancer, but there was no excrescence in the cavity, as I had expected to find.

Whether the discharge is blood or serum at first, or a mixture of both, it is generally odorless; but after a time it becomes fetid, and remains so persistently. The fetor appears, from the testimony of most observers, to be peculiar; but I have not been able to distinguish it from the smell of putrilage of other productions. When all these symptoms unite they form a case almost unmistakable. Lancinating pain, sero-sanguineous discharge, and peculiar fetor, continuing persistently, are almost distinctive of cancer.

I cannot lay much stress on either one of these symptoms; but of the three the most importance should be attached to the fetor. Persisting for weeks it should cause us to suspect a cancer. Contemporaneous with the complete establishment of these symptoms we have constitutional suffering. It is not often, I think, that general suffering precedes the local symptoms of cancer, and it has always seemed to me to follow as the effect of local disease. It has not been my lot to meet with the broken-down constitution sometimes said to be generated by the cancerous diathesis. Cancerous anæmia, causing the straw-colored translucency of the skin, considered characteristic of the malignant cachexia, is not distinguishable from the hæmorrhagic anæmia occurring sometimes in persons of the same age, produced by the drain upon the blood.

In the fully developed condition of carcinoma the constitution suffers, and the collection of symptoms are such as arise from the embarrassment and failure of the functions in a long struggle with pain, loss of blood, anxiety, and inaction. Debility, with indigestion, palpitation, restlessness, neuralgia, constipation at first, colliquative diarrhœa and aphthæ toward the end, nightsweats, wandering of mind, unsteadiness of purpose, succeeded by delirium and apathy; in fact, all the train of symptoms which precede dissolution when it approaches through protracted struggles, in which pain and exhausting discharges are the destroying agencies.

Causes.

But little can be said as to the causes of cancer of the uterus. The general opinion that it is hereditary in most cases is, doubtless, true; and yet a great many instances occur that cannot be traced to such a cause. This is no reason why they may not be hereditary, because sometimes the circumstances which permit the hereditary taint to show itself do not exist for a number of generations. And, again, the taint may be so dilute as to require very favorable circumstances or co-operating causes to bring it out. If a mother dies of cancer at the age of forty-five, and impart the same morbid tendency to her daughters, the laws of cell-development would bring it about at the same age in the child. If, therefore, the daughter dies a year too soon of some other disease, the taint is inoperative, though present. Two or three generations of cancer-bearing persons cut off by other diseases lose the history of its inheritance. Or if a mother be the subject of cancer at the end of a life of active, nay, excessive, child-bearing, while her daughter leads a life of celibacy, or has but a single child, the physiological life of the two is so different that we would naturally expect some modification of consecutive cell-development to result. So that, although the hereditary taint is the same in the two, their pathological ages may differ, and the daughter may not have cancer until a later period, and die before that time arrives. We should, I think, allow much for influences that may modify hereditary taints, and only regard them as hereditary tendencies, to be brought out in mother and daughter under similar circumstances, and which may be postponed or produced earlier in the one or the other by certain conditions.

Married women are affected more frequently than the single, and the fruitful than the barren. When we consider how many more married than single women there are in civilized communities, and how few married women are sterile, we ought not to attach much importance to these facts. A much more significant fact is that a very large majority occur during the menstrual years of a woman's life. It is true that there may be nothing more than a mere coincidence in this fact, and that, after all, the hereditary mutations in the system during these years may bring about cancerous deposit, independently of any connection with the menstrual function. But it certainly is a coincidence, if not an etiological coincidence. As to the connection of cancer with chronic inflammation and ulceration of the uterus, much has been and may be said. I cannot lay my hand on statistics upon this subject, but I have never observed the coincidence of inflammation and cancer, or that cancer was a consequence of inflammation. If, however, they are occasionally connected, there are but few at the present day who believe cancer to be the result of long-continued inflammation.

Diagnosis.

It would seem that the diagnosis of a disease so marked as cancer would be an easy matter, and so it is when all or even most of the peculiarities of the disease have been fully developed; but in the very beginning there may be much obscurity. A patient complaining of nothing more than a perfectly clear, inodorous, watery discharge, seemingly in the enjoyment of good health, would hardly be regarded as a victim to one of the most surely fatal and loathsome diseases incident to the human race; and yet it is almost invariably so when the patient is advanced beyond the epoch allotted to menstruation. The cancerous disease, as it usually occurs, advances beyond the period of doubtful symptoms in a very short time, and in the majority of cases our attendance is not requested until a scrutinizing examination will enable us to decide very positively on the nature of the case. Our attention will be attracted by the unusual amount and character of discharge, pain, and smell.

Summary of appearance in cases from Becquerel:

" *Cancerous Deposit.*

Cervix hard, unequal; nodulated, os not always open, sometimes wrinkled or furrowed.

Cancer of the neck often implicates the vagina.

Hereditary influence is often traceable.

Touch is painless.

Discharge sometimes absent, in certain cases very abundant, and consisting, for the most part, of albuminous serum.

Menstruation increased, being neither more nor less painful, and passing often into the state of real hæmorrhage.

Absence of special anæmia when the vagina and body of the uterus are involved. Cancerous cachexia.

Progress continuous and without cessation.

The pain in cancer is very sharp, intense, and lancinating, and not influenced by locomotion or movements of any kind."

" *Ulcerated State.*

Developed at the critical period of life generally.

Preceded and accompanied by hæmorrhages.

Severe, sharp, lancinating pain.

Development essentially in sharp irregularities and nodosities.

Adhesions to other organs soon as ulceration is formed; immobility of the uterus.

The surface only slightly soft, subjacent tissue scirrhous.

Ulceration deep, unequal, essentially irregular, with thick, elevated, and hard edges.

Always granulations.

Discharges extremely abundant, consisting of purulent and often sanguineous serum; nauseous and often fetid odor.

Great hæmorrhage from time to time, not necessarily at menstrual period."

" *Cancerous Ulceration*

Developed upon an hypertrophied and scirrhous surface.

Ulceration deep, vast, unequal, grayish surface with thick edges, and easily bleeding.

Ulcerated surface hard, presenting numerous lobes and tubercles, with nodosities and great hardness.

Often great loss of substance.

Cervix and corpus uteri immovable, on account of adhesions.

Discharges sanious, fetid, sanguinolent, and of an insupportable and characteristic odor.

Cancerous cachexia always present."

Prognosis.

The prognosis of cancer is a gloomy one. Indeed, there is no disease which so uniformly terminates fatally as cancer of the uterus. Notwithstanding this fact forces itself upon our observation, there will sometimes, in the course of a large experience, occur a recovery from it spontaneously and unexpectedly. I need not enter into the discussion of the causes of this fatality. Whether the disease is essentially a blood-disease, or whether primarily local, there are but few instances in which it is not multilocular. It exists from the beginning, or very soon afterwards, in more than one place. Yet again, this is not invariably the case. We very seldom meet with an instance in which the area of deposit is small and confined to one locality. If this locality is accessible, the case possibly is curable. I say possibly, because the pathology is treacherous. This gloomy picture is in part relieved by the greatly improved palliative means we now possess. Very much may be done to allay the agonizing state of body and mind under its ravages.

Treatment.

Both medicinal and surgical means fail to give the profession much satisfaction in the treatment of cancer of the uterus. When the disease is clearly confined to the cervical portion of the organ, amputation of that portion holds out a very faint hope of cure. It is so common for the cells constituting the main bulk of the deposit to be scattered far beyond the apparent margin of the disease, that much more frequently than otherwise an abundant crop of them is left behind to continue the work of destruction. Very rare instances of cure are reported.

While, then, it is our duty to give our patient even a remote chance for recovery, we cannot hold out much hope of radical cure by removing the cervix.

The same is true in reference to the operation for extirpating the entire uterus. The immediate danger attending the removal of the cervix need scarcely enter into our calculation of the benefits that may arise from it. This cannot be said, however, of the operation for exsecting the whole uterus. The dangers in this operation are manifold, and the results not far from fifty per cent. of deaths, while the immunity from a return is scarcely worth counting upon.

I do not think the operation can be sustained by success until the immediate dangers are very much diminished.

For these operations see Epithelioma.

Can we reasonably hope for a cure of cancer by medicine? I think this question can be unqualifiedly answered in the negative.

I fully believe that the rapidity of growth may sometimes be retarded, and possibly stayed for a length of time. Many medicines have enjoyed the reputation of curing cancer, and have been used with implicit faith, but I may safely say that not one does at the present time. I need not stop to inquire how such reputation could have been acquired, except to say that until within a comparatively recent date other and curable diseases were mistaken for cancer. Quite lately we have been assured of the great powers of cundurango in this direction, and for a time there were very slight reasons to hope that it was a useful if not a curative means in the treatment of cancer. It has enjoyed a place in the category of cures for cancer for a shorter time than many others.

Within a few months a beam of light has fallen upon the subject which has again awakened the hope that possibly we are on the eve of finding a medicine capable of influencing this destructive cell-growth.

Professor John Clay,* obstetric surgeon to the Queen's Hospital, Birmingham, has had some very fortunate experience with Chian turpentine in uterine cancer. The statement, coming from one whose professional character, so far as I know, cannot be impeached, and published in the staid old journal, the London *Lancet*, must command general attention. Considering our experience in the cure of cancer the results obtained by him seem marvellous, and for fear of marring the face of his report I abstain from making my own summary, but will quote his case in full, together with some of his remarks.

"A woman came to the hospital as an out-patient, aged fifty-two. She was suffering from scirrhous cancer of the cervix and body of the uterus. Hæmorrhage was excessive, pain of the back and abdomen agonizing, and cancerous cachexia well marked. The patient evidently had not a long time to live. The uterus was so extensively destroyed by the cancerous ulceration that its cavity readily admitted three fingers. In such a case it appeared to be justifiable to attempt to relieve the sufferings of the patient, even if the remedy should produce unfavorable symptoms, or should prove of no avail. I therefore prescribed Chian turpentine, six grains; flowers of sulphur, four grains; to be made into two pills, to be taken every four hours. No opiates were prescribed or lotion used. No change was to be made in her diet or occupation. On the fourth day after taking the medicine the patient reported herself greatly relieved from pain, and was in better spirits, but she complained of a large amount of discharge. It was feared that she referred to a discharge of a sanguineous nature. On examination, however, the vagina was found to be filled with a dirty-white secretion, so tenacious as to be capable of being pulled out ropelike, and this although she had syringed herself three hours previously. The os was quite contracted and would now scarcely admit the finger, and the surrounding swelling or cancerous infiltration of the cervix was much reduced. On the twelfth day the thick tenacious secretion had almost disappeared, and was succeeded by a somewhat copious serous fluid. The os was not so firmly contracted, but would only admit the finger. The patient's general health was improved and the medicine well tolerated. Sixth week: I ordered her a quinine mixture in conjunction with the turpentine, but sickness supervened, which ceased on omitting the quinine. Twelfth week: My notes are,—the parts feel ragged and uneven, and do not bleed on roughly touching them. The speculum shows several cicatricial spots. The turpentine has been taken regularly during the day for twelve weeks every four hours, during which time she has been almost free from pain and has had no hæmorrhage; no glandular enlargement; general health improved. Walks easily to the hospital, being about a mile distant. As the patient did not come again to the hospital her address was obtained, and it was ascertained that she had left her residence. Being a widow she could not afford to keep her home, and she went to reside with her married daughter in a northern town, but left no address. The case showed that the medicine was one of great power in cancer of the uterus, and it is to be regretted that an opportunity was not offered for fully carrying out the treatment.

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* June number, the report of London Lancet, 1880.

"Another patient, aged thirty-one, suffering from cancer of the os and cervix uteri, was treated concurrently with the one just mentioned. These parts were enlarged from carcinoma to the size of a hen's egg. The os was dilated, and the cavity of the cervix was filled with epithelial growths, which bled freely on examination. Sacral pain was very severe, and hæmorrhage had been continuous for the previous six weeks. The Chian turpentine and sulphur were given as in the previous case. The patient again attended at the hospital on the seventh day after taking the medicine. She was in excellent spirits, and expressed her gratitude for the relief afforded her. The medicine entirely relieved her pain. She had increased white discharge. On examination the os and cervix were found to be nearly of the normal size. The os was patulous, and its surface was studded with flabby shotlike eminences, which did not bleed on roughly rubbing them. I said to her: 'You are better; you must côntinue the medicine.' She answered: 'I should think I must, for I could not do without the pills; they have eased me so very much.' She continued to improve, and on the fourth week she expressed herself as quite well. I impressed upon her the necessity of continuing the medicine, and told her to see me occasionally. She did not come to the hospital again for four months, when she brought another patient to consult me, believing that she was suffering from cancer. I reproved her for leaving off attendance at the hospital. She answered that she thought it unnecessary, as she had continued quite well. On this visit she submitted to an examination. The os was rough and irregular, but was of nearly the normal size; no signs of cancerous infiltration; the periods were regular, and not profuse, and were unattended with pain; there was slight leucorrhœa. This case was a most remarkable one. The turpentine acted upon the growth with great vigor, literally melting it away in the brief period of four or five weeks.

"The third case was one of epithelial cancer of the os, cervix, and the body of the uterus, in a woman, aged fifty-two years. The vagina was not involved. The mass was larger than a cricket-ball, almost filling the vagina. The border of the os was three-quarters of an inch in thickness, forming a ring of two and a half inches in diameter, through which protruded an epithelial growth, principally proceeding from the anterior wall of the uterus, and projecting about two and a half inches into the vagina. The case was sent to the hospital for my opinion by my son, Mr. Langsford Clay, who had attended the patient but a short time. The journey to the hospital fatigued her very much, and she declared that she could not come again, and that she did not wish to remain as an in-patient, believing that she could not live many days. She had repeated hæmorrhages, had much pain, and had the cancerous cachexia well pronounced. My son volunteered to attend her at home, and I agreed to see her occasionally with him. I thought it advisable, as an experiment, to vary the treatment somewhat, and ordered to be added to the pills one-sixth of a grain of the ammoniated copper, as from the large mass to be acted upon I thought that an astringent should be superadded to the turpentine. The dirty-white, tenacious discharge, appeared and continued for the first five weeks, but there was no hæmorrhage after the first examination. The swollen os uteri and the cervix beyond were the first to show signs of diminution; this was noted on the fourteenth day. The tumor, however, was rough and shrunken, and did not project so much. Sixth week: The surface of the tumor was at the level of the os uteri, and seemed to consist of a mass of bloodvessels, which bled moderately after examination. This condition occasioned me some surprise, as three weeks previously the patient was ordered a lotion made with perchloride of iron, with a view to arrest hæmorrhage, since from her anæmic condition it was feared that the loss of a moderate amount of blood would be followed by serious consequences. I asked her what kind of a syringe she used with the lotion? She replied, 'I thought the lotion was merely to bathe the external parts.' This, as it happened, was very satisfactory information, as it showed that the lotion had no share in the reduction of the mass, which now was scarcely half the original size. She was supplied with a syringe for the purpose of applying the lotion, and after using it three days the mass of vessels had considerably shrunken, and no longer bled on manipulation; but the surface of the growth had the touch and appearance of a gangrenous mass, but there was scarcely any fetor. The patient now complained of gastrodynia, with colicky pains in the bowels, but she had no diarrhœa or vomiting. I believed this to be due to the copper, and it was consequently discontinued. It also appeared to me that the turpentine might not be efficiently digested in the solid form, and that it would be better if the remedy were administered in a state of minute subdivision, as in the form of an emulsion. An ethereal solution of Chian turpentine was prepared by dissolving one ounce of the turpentine in two ounces of pure sulphuric ether (anæsthetic). The ether dissolved the turpentine instantly. This solution was given to our skilful dispenser, Mr. Whinfield, with a request that he would prepare a pleasant mixture or emulsion from it; and, after a few trials, he prepared one which is not unpleasant to take, according to the following formula: Solution of Chian turpentine, half an ounce; solution of tragacanth, four ounces; syrup, one ounce; flowers of sulphur, forty grains; water to sixteen ounces; one ounce three times daily. This form of mixture was given to the patient, and was much liked. She has now taken the turpentine for thirteen weeks uninterruptedly. The os uteri is a little more than one inch in diameter, and feels like a ring of cartilage about a quarter of an inch in thickness. The tumor has nearly disappeared, and the finger can be introduced posteriorly into the uterus for more than an inch. The general health has much improved, and she is quite free from pain and looks cheerful, and is becoming stouter. No sedative whatever has been given during the treatment. Fourteenth week: She complained of severe 'cramplike pains' in the back and lower part of the abdomen, which she attributed to the mixture, and in consequence it was discontinued for a few days, and an opiate given, by which she was greatly relieved. The turpentine was again resumed. Nineteenth week: She is now fairly convalescent. The growth has almost disappeared, and the parts beyond the os uteri are somewhat hypertrophied, yet are almost normal to the touch.

"The fourth case was that of a patient aged thirty-two years, who came to the hospital after having been discharged as incurable from the Women's Hospital. She was greatly depressed, and was most desirous to be cured, for the sake of her family of young children. She has had repeated floodings, and suffered greatly from pain during the past five months. Constipation very troublesome, which probably arose from the opiates she had been in the habit of taking. On examination, she was found to be suffering from epithelial cancer of the os and cervix uteri, but not involving the vagina. There was a cancerous mass of the posterior parts of the os and cervix, of the size of a goose-egg. This growth pushed the os uteri towards the pubis, almost preventing that part from being felt. The turpentine mixture was given her three times daily, and from this period a very rapid diminution of the growth took place, so that by the sixteenth day it had almost entirely disappeared. The os uteri was now *in situ*, admitting the finger readily, and there was the same condition of the vessels as that observed in the preceding case. The lotion with the perchloride of iron was used daily for a few days with excellent effect. In the ninth week the patient suffered from spasmodic pains in the back and abdomen, and as this was attributed to the medicine, it was discontinued, and iodide of calcium, in five-grain doses, three times daily, was administered. This was taken for about a fortnight, but, not feeling so well, the patient was admitted into the hospital. The condition of the internal organs was now much the same as before, the iodide of calcium was given, but there was some thickening about the cervix, which was fixed to the vagina. The rectum was excessively loaded, and required several days to effectually relieve it. The Chian turpentine was administered simply; but a lotion was prescribed, containing six grains of white arsenic to one pint of water, to be used daily. Under this treatment the women very rapidly improved, the pains entirely ceased, and the parts became much reduced in size, and more movable. The patient was now anxious to leave the hospital for her home, as she felt quite well; but it was deemed advisable to send her to the Sanatorium instead. She is very active, cheerful, and happy, and may be pronounced convalescent.

"Other cases are under treatment, both in the hospital and privately, all showing similar effects. The remedy is now being tried in cancer of other organs, and apparently with good results. One of the most interesting, perhaps, is a case of scirrhus of the breast, which has been under observation for some weeks. Among the other cases are cancer of the vulva, stomach, and abdomen, in which very remarkable benefit has been already produced.

"From the results obtained by the use of Chian turpentine, it may be confidently said that the remedy does exert a powerful action on cancer of the female generative organs in particular, and it will be of advantage to point out some of the conclusions at which I have arrived respecting the efficacy of the drug, and the manner in which it should be employed. The oil of turpentine, if it produces any effect on cancer, is inadmissible on account of the speedy production of its specific effects even when administered in small doses. The same remark applies with less force to the Venice and Strasbourg turpentines; in my hands they have not produced the same beneficial effects on cancerous growths as the Chian turpentine has done. The maximum dose of the last-named drug which can be safely and continuously given is twenty-five grains daily. It is advisable to discontinue the remedy for a few days after ten or twelve weeks' constant administration, and then to resume it as before. The combination with sulphur was given at first, and has been continued. It is doubtful whether much benefit is derived from the combination, but the effects have been so uniformly good with it, that it was thought advisable to continue its use. There is every reason to believe, from the trials made with other substances in combination with the turpentine, such as carbonate of lime, iodide of calcium, ammoniated copper, quinine, berberine, hydrastin, etc., that the turpentine is best administered simply, as the most marked and rapid effects have always been manifested when it has been given alone.

"The turpentine appears to act upon the periphery of the growth with great vigor, causing the speedy disappearance of what is usually termed the cancerous infiltration, and thereby arresting the further development of the tumor. It produces equally efficient results on the whole mass, seemingly destroying its vitality, but more slowly. It appears to dissolve all the cancer cells, leaving the vessels to become subsequently atrophied, and the firmer structures to gradually gain a comparatively normal condition.

"It is a most efficient anodyne, causing an entire cessation of pain in a few days, and far more effectually than any sedative that I have ever given. In the cases I have described no sedative was employed in any instance, although in some cases where great pain had existed previously to commencing the treatment, large doses had been given. Whether this arrest of pain arises from the death of the tumor, or, as my son suggests, is due to there being no longer irritation of the sentient nerves (in consequence of tension being withdrawn by the removal of the cells), the fact is the same.

"If, after the use of the remedy for some weeks, one of these cases were examined by a stranger for the first time, he would probably conclude that it was one of commencing malignant disease, by reason of the irregularities of its surface. The effect of the remedy being first to remove the cellular structures, any loss of tissue produced by the invasion of the disease cannot be restored, and hence the irregular touch and appearance even after cicatrization. The arrest of the hæmorrhagic discharge and the remarkable freedom from glandular affections, after a lengthened use of the turpentine, are especially important factors in materially aiding the removal of the cachexia, and of improving the general condition of the patient.

"Without being in position to affirm that the Chian turpentine is a positive cure for advanced cancer of the female generative organs, yet, however, the facts here adduced may be interpreted in this respect, two circumstances are indisputable—one, that all the patients after several months' treatment are living, and that the disease has not advanced as is usually the case, but has retrogressed—in fact, has all but disappeared; and it may at least be safely asserted that when the remedy is steadily used for some time it arrests the progress of the disease, and relieves the pain incidental to the morbid growth in a manner which cannot be said of any other remedy. It is probable that on an extended experience of its use and by variations of the mode of administration, it may prove an effectual cure for this intractable disorder. Patience and perseverance on the part of patient and medical adviser are absolutely required. We know that in some diseases, as bronchocele and syphilis, a long continuance of well-known remedies is often necessary to affect a cure of the particular disorder, and that the administration of the remedies has to be varied from time to time, according to the therapeutic effects produced by the drugs. In cancer, as far as experience has at present indicated, the same alternating method may perhaps have to be employed. Whatever may be the ultimate results there can be no doubt that Chian turpentine in these disorders is a most valuable medicine. Judging by my experience it is no figurative expression to say that it acts as a direct poison upon the growth, probably causing its ultimate death. In advanced cancer the process of reparation is slow, but if the surrounding structures are not too much involved in the process of destruction, it will seem that a cure may be reasonably expected. It is not that the remedy has failed against the cancer, but that the vital organs are so much destroyed that their complete reconstruction and adjustment of functions are not possible, and life fails in consequence of their mutilated condition. Even under these circumstances, if the cancer does not recur, the efficacy of the medicine is obvious. In the early stages of cancer it may be affirmed that an undoubted cure may take place speedily, and as the contiguous structures are not extensively involved, but little deformity ensues; and experience justifies the expectation that under such circumstances a recurrence of the disease will not follow.

"The history of the local treatment of cancer of the uterus is one of singular interest, and is highly instructive to the practical physician. The contrast between the general and local treatment is the more notable, as nothing can be more injurious to the welfare of the patient than an attempt to destroy the cancer by external agencies. The disease is not to be averted by this means, as the symptoms assume a more intense and threatening character, until the patient rapidly sinks. It may be observed that the internal treatment here recommended when used for a considerable period is borne by the patient with remarkable tolerance. As I have mentioned, in some of my experiments I determined, in order most thoroughly to test the medicine, to reply upon this alone. Recently the arsenical lotion has been superadded, and with no injurious consequences—it appears to act as a disinfectant, and it may produce some benefit by promoting the cicatrization of the tissues. Several suggestions offer themselves for inquiry as to aiding locally the detachment of the growth, after its vitality has been destroyed; but this is not of much importance, as there seems to be no fear of the blood becoming affected by the absorption of the decaying tissues, the turpentine probably preventing any such calamitous occurrence.

"If the practice now described should prove by future experience to be justified, then it will be incumbent upon the medical adviser to treat cancer of the generative organs at an early stage of its development, and it is reasonable to conclude that this dreaded and most fatal disease will no longer be the scourge it has hitherto proved, and that another benefit will have been conferred upon suffering humanity by the resources of therapeutic art."

Palliation.

There comes a time in the progress of cancer of the uterus that the patient is prostrated by the septic effects, caused by absorption of gangrenous products at the surface of the degenerating mass. When this is the case we may often relieve the patient more by removing all the dead and dying tissue with a sharp curette and thermo-cautery than any other way. To do this the vagina should be dilated with Sims's or Simon's speculum until the parts are thoroughly exposed. Then with the sharp curette we should gouge out and remove in detail all the diseased substance down to the solid tissue of the cervix, and then cauterize the whole surface with the thermo-cautery. In this way, for a time, get rid of the hæmorrhage, the fetid discharge, and often the distressing pain.

After this the patient's general health will almost always be greatly improved, and she a happy respite from her terrible suffering.

This operation may be repeated once or oftener, as the conditions seem to justify.

One who has never tried this method of relieving the patient would very naturally be deterred from resorting to it by fear that the hæmorrhage would be dangerously profuse. A trial, however, will prove to him that this apprehension is groundless. If the curetting part of the operation is done briskly there will not generally be much hæmorrhage, and the benefits resulting from it will far exceed the ill effects of the loss thus incurred.

I mention this as the first and most important palliative measure to which we can resort, as the comfort of the patient will be promoted to a greater extent than by a resort to any other measure.

Palliation of the pain, smell, and debility, is the object of the most of our treatment. We use local remedies for pain, introduced into the vagina. Of course, the anodyne and anæsthetic remedial agents constitute our resources for combating pain. Opium, belladonna, cicuta, hyoscyamus, and Indian hemp, may all be used locally for the pain. The best form for their application locally, is that of a bolus of five grains of pul. opii. We may instruct the patient to introduce the finely powdered opium through a small glass tube, with a piston of whalebone and cotton. It is applied thus to the ulcerated part and walls of the vagina in the neighborhood, and very effectually acts as an anodyne. Ten grains of the extract of hyoscyamus may be used as a bolus, or two grains of ext. belladonna; and so on with all the anodynes. A grain of morphia may be mixed with the ext. hyos. to great advantage.

Medicated injections often soothe the diseased part very much also. The watery extract of opium may be thrown into the vagina by a small syringe, and allowed to remain, the patient lying on her back for a length of time. Hydrocyanic acid in solution, gtt. xx to a pint of water, passed through the vagina, has a very pleasant effect sometimes. Injections of vapors of the anæsthetics are highly recommended, particularly by Professor Simpson. Carbonic acid gas and chloroform are those most used.

The chloroform vapor may be passed through the vagina by the ordinary perpetual syringe, made by the Union Rubber Company. The chloroform should be placed in the bottom of a large bottle, while the receiving-tube of the syringe may be passed through the cork and made air-tight with wax. The other end, being inserted in the vagina, high enough to almost come in contact with the disease, the pumping may be commenced. The vapor will be caused to rise in the bottle quite rapidly under the exhausting influence of the syringe. Care should be taken not to let the tube deep enough in the bottle to come in contact with the chloroform, lest this fluid, instead of its vapor, pass through the instrument. The vapor thus delivered into the vagina causes a sense of heat and glow, which very soon seems to replace the pain. When properly done, patients experience great relief from this gaseous injection. The same apparatus will do to convey carbonic acid gas to the parts. The gas is generated by mixing in the bottle carb. soda and tart. acid, and then pouring a little water upon it. Although I have never yet tried the effect of great cold to the part, I have no doubt it would be very effective in relieving the pain. It should be applied through the speculum directly to the parts diseased, and no other. A small amount of the freezing mixture, of two parts pounded ice and one part common salt, in a small muslin bag, is the means used by Professor Simpson. It is thought this cold not only relieves the pain, but that it retards the advance of the disease somewhat. The contact should be continued until the parts assume a pale, bloodless appearance, when this is practicable, and may be used twice or three times in twenty-four hours. With the local remedies for pain may be mentioned the subcutaneous injection of morphia over the sacrum, or in the iliac region.

All local remedies for pain will, after awhile, fall short of the relief demanded by our suffering patients, and we will be under the necessity of introducing them into the system in a more effective manner. We must resort to their internal use. I need not mention the anodynes to which we would resort in such cases; they are well known to the profession. I would, however, caution the student not to use opium when any of the others will answer the purpose. Indian hemp will be found to do this more frequently than any of the others. They will all fail, eventually, and opium will prove the great blessing in such cases. And let me add the further caution: to commence with as small doses as will answer the purpose; and while we deal liberally enough with the drug to get its good effects, increase it slowly as possible, for with all our precautions in this respect we will be under the necessity of giving it enormously. The anæsthetics are too evanescent to be relied upon for main remedies, but they will render the influence of opium more prompt, and perhaps lasting.

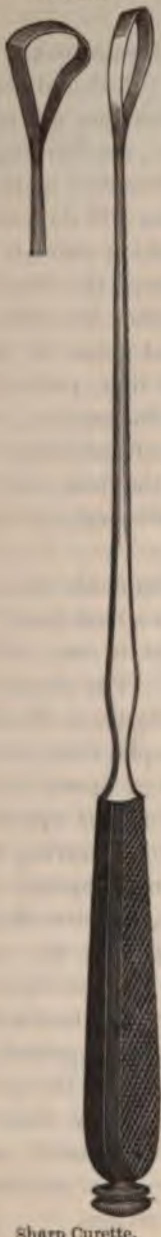
The hæmorrhage of cancer will sometimes require prompt interference. I think, however, that although the bleeding is always ultimately exhausting, that it is seldom immediately dangerous from its copiousness. I have generally, when the hæmorrhage required interference, depended upon the introduction of small pieces of ice frequently repeated. It is often very grateful to the patient as well as hæmostatic. Dr. Simpson recommends powdered tannin introduced through the speculum and placed on the part; but he places more dependence on a paste made of perchloride of iron and glycerin. If the bleeding should be very alarming, notwithstanding these means, the tampon would be our last resort.

The offensive odor emanating from the disease makes it very desirable to have some means of correcting it. I should remark, with reference to the plans often resorted to, that they are more or less injurious to the patient and attendant, viz., the burning of sugar, myrrh, etc., in the room. This should be done very sparingly. For the air, chloride of lime and good ventilation will do better than all other expedients. We do not wish to make a stronger smell less offensive, to be sure, but we desire to remove the effluvia. Burnt sugar simply fills the room with various other less offensive gases, which we breathe with them, the original cause of the trouble. Chlorine, disengaged from the chloride of lime, probably destroys the material floating in the air that offends the sense of smell. But the emanation may be lessened by the use of carbolized water as a wash and injection. Frequent changes of the linen and bedding of the patient are matters of cleanliness that, of course, will readily suggest themselves.

Septicæmia is the condition which most commonly causes the greatest suffering and hurries the patient towards a fatal issue. Any palliative measure, therefore, which enables us to stay or modify its course, will prove a source of great relief. The absorption of the liquid products of the necrosed and sloughing tissue eliminated from the surface of the ulcer is the cause of the septic fever; hence a most important item in the palliative treatment of cancer is to keep the surface of the ulcer as free from dead and fungous substance as possible. This may, and ought to, be done by removing it with the sharp curette as often as necessary. When we operate for the removal of the necrosed substance and fungus, the parts should be well exposed by Sims's or Simon's retractor speculum, the vagina thoroughly washed out, and then freely sponged with the tincture of iron. This will enable us to see the line of demarcation between the sound and dead tissue. Then with Simon's spoon every portion of the rotten substance should be freely removed. During the operation frequent washing away of the blood will be necessary, that we may see what we are doing. When the ulceration is extensive, and making its way toward the bladder or posterior peritoneal cul-de-sac, it will require care to avoid opening one of these cavities.

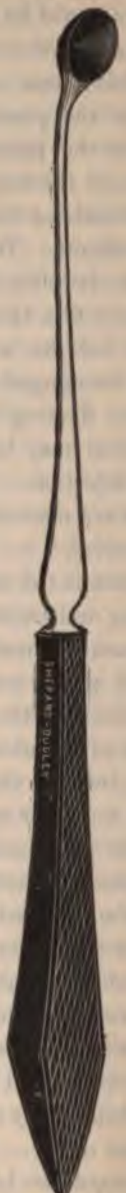
Although I have done this palliative operation a great many times, I have not seen an excessive loss of blood or any other serious consequence follow it. It is always better, however, to be prepared with means by which to check the bleeding, and probably the best is the thermo-cautery. If this, or some other form of cautery, cannot be

FIG. 135.



Sharp Curette.

FIG. 136.



Siemond's Curette.

commended, and hæmorrhage is sufficient to require an hæmostatic, a tampon of cotton, saturated with a solution of the persulphate of iron, may be advantageously used.

It is surprising how much relief this little operation generally affords. The patient will often be so much improved as to indulge in the hope that she is recovering from her loathsome disease. In a greater or less time, however, the symptoms will return, and may be again relieved by the operation.

When a case is advancing slowly, this process of cleansing the ulcer may be profitably and safely resorted to a number of times. We ought not to try to remove any of the tissue beneath the ulcerated surface, but confine the operation to the scraping away of the necrosed substance. This same operation is applicable to cases in which there are frequent hæmorrhagic discharges. It generally puts a check, and sometimes permanently, to losses of this kind, especially if followed by the use of the actual cautery or the thermo-cautery. The history of this terrible malady discloses many disappointments in discoveries of cancer cures. The more recent discoveries of this kind are the jaborandi and Chian turpentine. The former temporarily tempted the credence of the more sanguine of the profession, but after repeated trials has been condemned as utterly worthless.

The Chian turpentine, which, on account of the great respectability of its early advocate, seemed to hold out a faint hope that we were on the threshold of a valuable discovery, has been found wanting also. That the progress of cancerous deposit will ever be arrested by medicine is a problem for the future. That true cancer of the uterus can be cured by any kind of surgical operation is yet to be proven. Cancerous deposit in the uterus, if not the result of blood disease, is a focus from which widespread contamination emanates in every direction, to an extent that surgery cannot reach.

Such is the melancholy paucity of our resources in cancer of the uterus. Scarce as they are, however, they may afford the sufferer great comfort; and we should fall short of our duty if we did not industriously employ them, as the best the profession can afford.

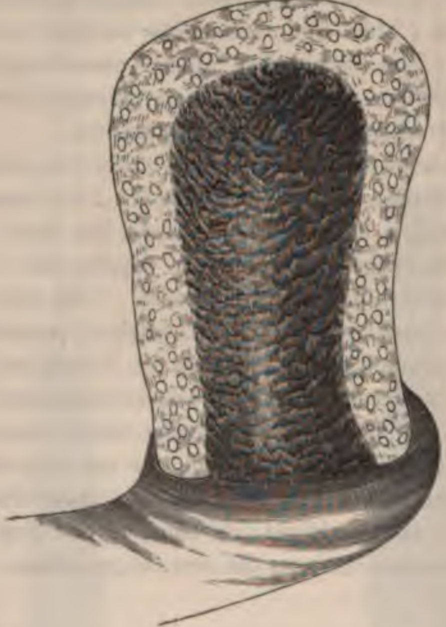
CHAPTER XXXI.

EPITHELIOMA, CANCROID, EPITHELIAL CANCER OF THE UTERUS.

ALL these terms, with many others, are applied to a fungoid development in and upon the mucous membrane of the uterus. It is essentially an excessive and modified proliferation of the epithelial cells, which destroys the membrane upon which it grows, and *slowly* penetrates adjoining structures.

Its development is not by interstitial deposit, as in other varieties of cancer, but consists of superficial accumulations and soft deposits of epithelial cells, held together by very delicate, connective tissue.

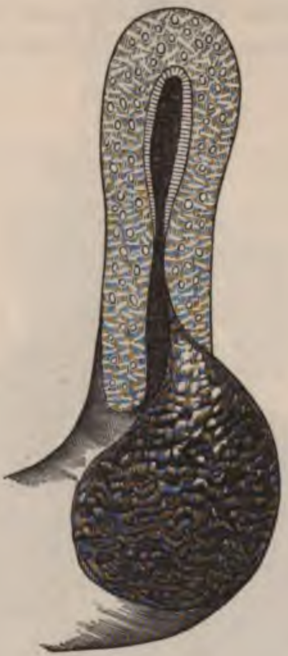
FIG. 137.



The shape of the deposit, or growth, varies. In some instances it is thinly spread over a large surface, while in others it grows out as a fungus from a restricted area. In the former instance the whole mucous membrane of the cavity of the uterus may be overlaid and permeated by it, from the external orifice to the fundus, and thus be converted into a flat, friable covering of the deeper structure; while in the latter there may be fungi, of greater or less size, projecting from the mucous membrane of the uterine cavity; but much more frequently they spring from one of the cervical labia, or the whole cervical circle.

The substance of the membrane thus diseased is generally hypertrophied, but not otherwise very much changed in character, until the disease has made great progress on the membrane itself. When the disease is situated in the endometrium the body of the uterus may be enlarged for a long time, and never attached to the other organs. When the growth occupies the external membrane of one of the cervical labia the submucous structure is sometimes increased so that it may project into the vagina much beyond its ordinary extent. This will give the appearance of a large fungus, while it is really the hypertrophied lip covered with cancroid deposit. At other times the labium is not so much enlarged, while the fungus projects down sufficiently to partially or wholly fill the vagina.

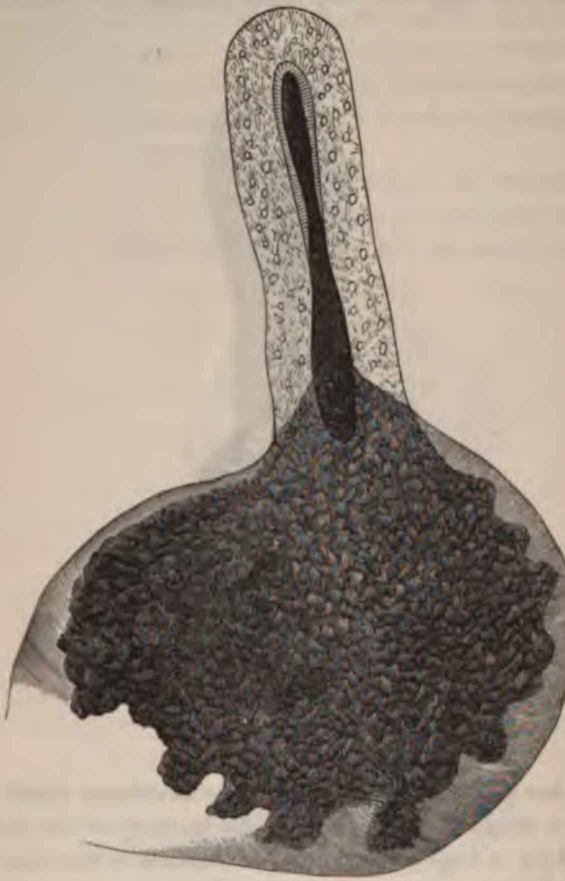
FIG. 138.



In all of these varieties, after a time, the more superficial parts of the growth undergoes a process of necrosis and sloughs off. The particles thus sphacelated, together with sanguineous and mucous fluids, constitute the discharges from epitheliomatous surfaces.

Disintegration of this sort is generally accompanied with further growth, so that the size of the deposit is not materially, if at all, diminished.

FIG. 139.



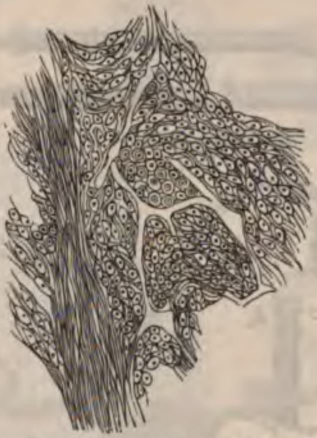
Fungus Growing from the Cervix.

When the process of disintegration has fairly begun the symptoms of cancer become developed, and gradually the *rôle* of septic symptoms supervenes, and carcinomatous dyscrasia is established.

Diagnosis.

The symptoms of epithelioma are the same as in other forms of cancer. They have already been described, and I need not reproduce them here. We may differentiate epithelioma from other forms of cancer by examination with the finger and sound. In epithelioma there is an absence of the irregular hardness caused by the submucous deposit by the presence of a soft, friable projection into the vagina, or the same kind of substance occupying the whole of the cervix, *not indurated*, but somewhat enlarged. When this substance exists in the mouth of the uterus we may ascertain how far it extends by passing the sound through it into the cavity. The resistance to the instrument will be slight, yet sufficient to impart that feeling of resistance caused by its passage through a yielding tissue. If the deposit is confined to the cervix the slight opposition to the advance of the instrument will cease before it reaches the uterine cavity. If it extends to the fundus the resistance will continue the whole depth of the organ.

FIG. 140.



Structure of Epithelioma.—From Cornil and Ranvier.

I can imagine, although I have not met with such a case, that a polypus in a gangrenous condition might embarrass us somewhat in making a diagnosis. The use of the microscope would clear up the difficulty in such a case. A very small piece pinched off from the mass will suffice for examination. In the disintegrated substance of the polypus we would find the débris of fibrous tissue, while the cells of epithelioma would be found in the malignant growth. If a sarcomatous polypus should occupy the vagina the microscopic test would be equally decisive.

From a decaying placenta, arrested in the os uteri, we would distinguish the epithelioma by means of the microscope, in case any doubt should arise.

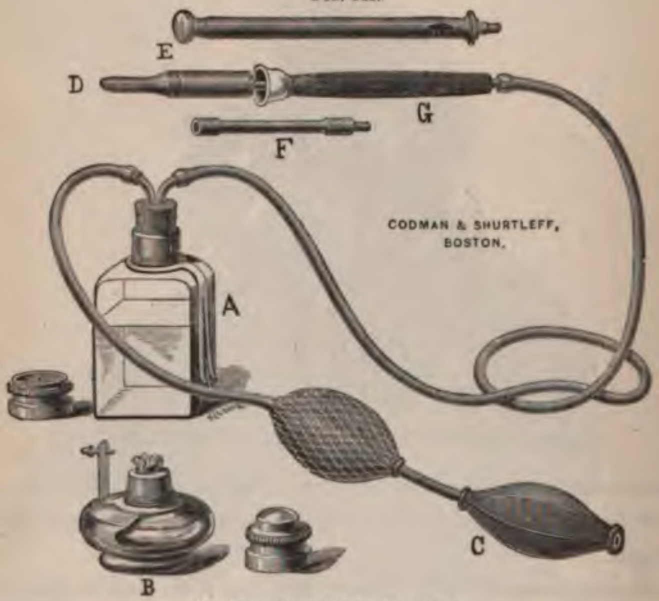
Prognosis.

The prognosis is not so hopeless as in the other varieties of cancer of the uterus, as it is usually localized—in the earlier stages at least it is occasionally amenable to treatment. Without treatment it is equally fatal, as the morbid process is progressive to an unlimited extent.

Treatment.

The treatment of epithelioma of the uterus, as just intimated, is much more promising than the other cancerous affections. The curative treatment consists in removing the whole of the disease, and when this is practicable we may reasonably indulge a hope of success. This can generally be done when the morbid deposit is confined to the vaginal portion of the cervix, and sometimes when it extends to the fundus of the uterus. The means we possess by which this may be accomplished are the knife, the scissors, the écraseur,—wire or chain,—the galvano-cautery, and the thermo-cautery, or the actual cautery.

FIG. 141.

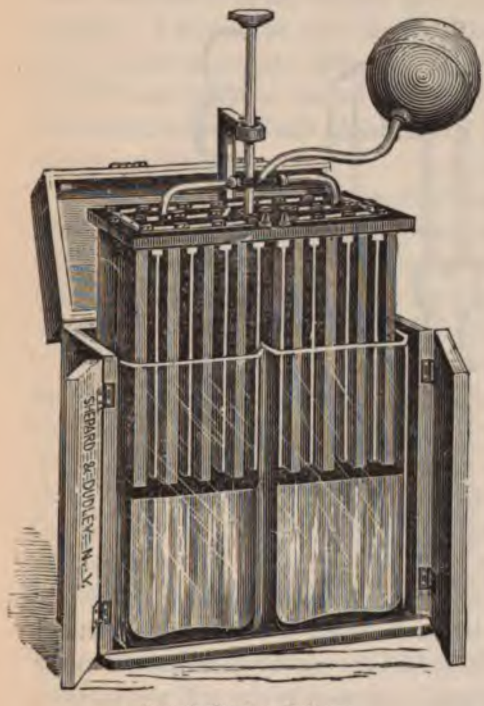


Dr. Paquelin's Thermo-cautery.

I have performed the operation for removing epithelioma by all these different instruments separately, and by using several of them in the same operation.

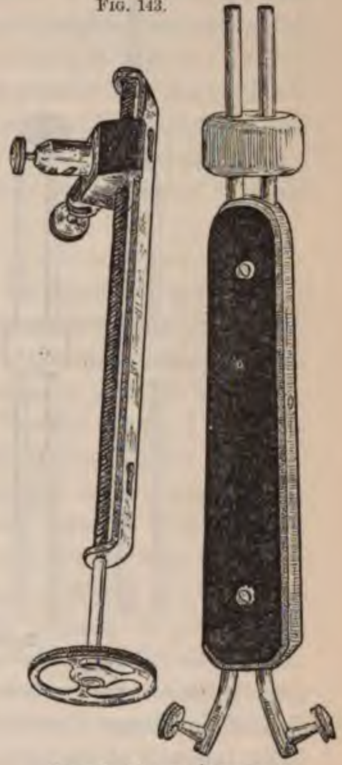
Dr. John Byrne, of Brooklyn, in a very interesting article published in the second volume of the *Transactions of the American Gynæcological Society*, advocates the exclusive use of the galvano-cautery. He gives a number of cases illustrated by his method of operating, and of the success following it. The results are very encouraging, and at the time his plan was published it was regarded as most promising. He exposed the cervix by his speculum, and amputated it with his cautery knife, heated by the battery to a temperature that made it assume a dull red color; or, surrounding the cervix, or that portion to be removed by the platinum wire, and then applying the battery so as to heat it to the same temperature. In doing the operation according to the latter method the cervix is fixed by the vulsellum, and, if movable, drawn down to a convenient distance from the vulva, and the wire, while cold, placed around the cervix as high as possible not to include the utero-vaginal junction. In this position the wire is tightened while cold, and then heated.

FIG. 142.



Byrne's Cautery Battery.

FIG. 143.

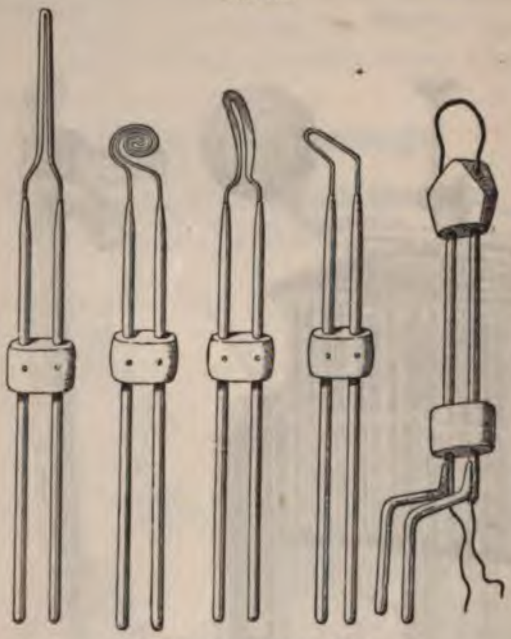


Byrne's Cautery Écraseur.

Before heating the wire the constriction should be increased slowly until the wire has fairly imbedded itself into the included tissue.

Quite forcible traction, exerted by the vulsellum, should be maintained while the wire is slowly passing through the substance of the neck. This will cause the central portion of the amputated cervix to be divided higher than the periphery, and the cavity will be conoid in shape with the apex in the centre. If the disease is not all removed by this operation the cautery knife may be applied, as different parts are drawn down by hooks, until the operator is assured that all the disease is removed, or that the operation is carried as far as the integrity of the bladder and peritoneal cavity will allow.

FIG. 144.



Byrne's Cautery Electrodes.

The prominent dangers in performing this operation are hæmorrhage, wounding the peritoneal cavity, and opening the bladder. The first may be avoided by having the temperature of the wire low. If it is white hot it will cut the tissues, including the arteries, without closing the latter. But if of a dull red heat it will coagulate the albumen in the areolar tissue, and the blood in the arteries, some distance from the wire. In this way the vessels will be sealed and primary hæmorrhage avoided. To avoid wounding the bladder or peritoneum, I am in the habit of applying the wire with the cervix in its normal position, and making traction after the wire has been drawn tight enough to fix it firmly in its bed. If we are careful to apply the wire in this way, there is not much danger of accident. When the disease does not extend to the junction between the vagina and uterus, this is an admirable method of removing the cervix. The objections I make to the galvano-cautery are, that it requires more skill in the management of the battery than most practitioners possess; that the burnt surface is so changed we are unable to judge whether at the point of separation all of the disease has been removed or not; that it is cumbersome as a portable instrument, and that it is no better in any respect and not so manageable as the thermo-cautery. I think also that the great heat generated in the vagina is not without objection. The advantages are that it destroys the cell growth some distance above the surface of the amputated stump, and the operation is entirely bloodless. I have not employed it in my recent operations.

In removing the cervix for epithelioma, it will be very convenient, however, to have the galvano-cautery, or the thermo-cautery, as one of the instruments, but if we intend to thoroughly remove the disease, and especially if it extends above the vagino-uterine junction, I think we can remove it more safely with the scissors or knife, or both.

If there is much of a tumor projecting into the vagina, I generally apply the écraseur around it, and include, if possible, the whole of the vaginal neck within its grasp. I use the chain instead of the wire in the écraseur because I find it much easier to manage. We should be very careful in the adjustment of the chain to avoid injuring the bladder or penetrating the peritoneal cavity. In this part of the operation the galvano-cautery may be used in place of the écraseur. If we use the ordinary écraseur, there is no need of dilating the vagina with any sort of speculum; but if we use the hot wire, then the vagina should be well dilated by Sims's speculum, Simon's retractor, or Byrne's speculum. After as much as possible of the vaginal cervix has been removed in this way, the most important part of the operation is just begun, because, in most cases we will not be sure of having removed all the diseased tissue. The surface from which the neck has been thus removed should be examined thoroughly. We can do this best by seizing it with the vulsellum or single hooks and drawing it down as low as possible, where it can be thoroughly examined. It will also insure precision to examine the portion amputated from the cervix to ascertain whether any of the diseased tissue was cut through, or whether the cut surface is all sound or not.

If we can assure ourselves in this way that the disease is all removed, we have little else to do than secure our patient from hæmorrhage. In my own operations I have had no trouble with any of the arteries divided. They usually spirt pretty freely for a few minutes, and then gradually cease bleeding. I do not make this statement to encourage carelessness as to hæmorrhage, because, in exceptional instances, in the hands of other operators, there must have been dangerous cases. Hence, as a precaution against hæmorrhage, and for the purpose of destroying the cell growth deeply, we should apply the cautery at a dull red heat all over the amputated surface. If we find by the examination of both amputated surfaces that we have not removed all of the disease, or if we have any doubt upon the subject, we should seize point after point of the remaining portion of the uterus and cut it off with the scissors, and thus excavate the supravaginal cervix and body of the uterus as high as practicable, or until we are satisfied that all the disease is removed. By the frequent examinations as we proceed in this part of the operation, while the whole is held down, we can keep within the peritoneal covering of the uterus. In operating in this way, we should often introduce the sound to determine the direction and depth of the uterine cavity above the excavation. The sound will serve as an excellent guide to our progress. If the vagina is roomy enough, we may sometimes have the sound held there most of the time. After we have excavated to the desired extent, we should char the surface of the artificial cavity with the thermo-cautery. Dr. H. C. P. Wilson, of Baltimore, has invented an ingenious shield, with which the cautery is surrounded, to prevent the heat from affecting the parts anywhere except at the point of contact. Wilson's shield is a very useful addition to Paquelin's thermo-cautery.

This operation should be repeated *as soon* as evidence of the return of the disease is apparent. Often when the cavity of the uterus has been curetted free from the epithelial deposit, that organ contracts, and, to some extent, obliterates the cavity formed by the excavation, and the area of the disease becomes less each time. In such cases we may repeat the operation with more prospect of removing the whole of the disease than in the first; and even the third or fourth operation may thus advantageously be performed. Recent experience leads me to attach much importance to the very free use of the solution of the pernitrate of mercury. Small pellets of absorbent cotton saturated with that fluid are placed in contact with the scraped surface, supported by larger pieces of dry cotton. These large pieces we use in such position and in such quantities as to completely protect the sound parts, by absorbing the free acid. I am encouraged in this recommendation by the fact that epithelial cancer may occupy the mucous membrane for a long time without vitiating the substructure deeply, by high authority, and by the result of my own observation.

I prefer this before any other medicine, because it is absorbed and acts as a local alterative upon the lymphatics and the juices surrounding the parts.

Formidable as this operation really is, I have not seen it followed by untoward symptoms of any kind. In many cases I have excavated the uterus entirely above the internal os until the walls became very thin in every direction, and many others to a less extent. Opening the peritoneal cavity and bladder is one of the dangers in the progress of this operation. This can be avoided by care. Hæmorrhage is probably the only other danger, and with Paquelin's thermo-cautery, or the galvano-cautery, at hand we can easily check it by touching the bleeding artery.

The operation may be followed by dangerous shock, primary or secondary hæmorrhage, metro-peritonitis, cellulitis, or septicæmia. For the treatment of all these conditions, except hæmorrhage, the reader is referred to ovariotomy.

Injections of carbolized water, sufficient to keep the vagina well cleansed, is all that will be found necessary to secure the patient from blood-poisoning.

Ordinarily the cavity is filled up in two or three weeks, and the wounded cervix covered with a firm cicatrix. In some instances, however, the process of malignant degeneration goes on, and we are restricted to palliative measures for the rest of the patient's life.

If extirpation of the uterus is justifiable in any form of malignant disease it is so in epithelioma, for that disease is often entirely localized in the uterus, and yet occasionally so situated that we cannot remove the whole of it by any other operation.

The formidable operation proposed by Freund, and practiced by him and his followers, has not been followed by a success that would encourage me to perform it under any circumstances. We may reasonably hope, however, that some method of exsecting the uterus which will be less difficult of performance and less dangerous in its results may be some day invented. Indeed, a long stride in that direction has already been made, and is illustrated by an operation recently performed by L. C. Lane, M.D., Professor of Surgery in the Medical College of the Pacific. Dr. Lane terms his operation pervaginal enucleation of the uterus. That term alone would mislead the reader, for the uterus was not enucleated; it was extirpated, and the operation might very properly be called colpo-hysterectomy, or vaginal extirpation of the uterus.

The operation is very simple, and does not involve the necessity of extreme and protracted exposure and handling of the abdominal organs. The wounding of tissue is less extensive, and the whole operation is done in the lowest and least susceptible portion of the peritoneal cavity.

After placing the patient on her side, in Sims's position, and dilating the vagina with Sims's speculum, Dr. Lane had the uterus drawn down with Pean's tenaculum forceps, and then made an incision through the posterior wall of the vagina.

> "The fundus was then seized by the forceps and the uterus made to revolve on its transverse axis, so that the Fallopian tubes and ovaries were brought down low in the pelvic excavation in such manner that the base of the tubes and accompanying arteries became accessible and easily ligated.
>
> "Ligation was done with a strong silken cord so passed through button-holes (?) in the broad ligaments that they could not afterward slip off. This portion of the operation was completed in fifteen minutes, but the detachment of the organ from the bladder was long and tedious, but finally successfully done without opening that viscus. Yet so thin was the remaining vesical walls that the lustre of the catheter, which served as a guide, at times could be seen. The organ being removed the pelvic excavation was rinsed out with a one per cent. solution of carbolic acid, a Nélaton flexible catheter was placed in the bladder, the pelvic excavation was filled with lint, saturated with four per cent. carbolized linseed oil, and the abdomen covered with india-rubber ice-bags. A drainage-tube was so fixed alongside the carbolized lint as to allow the escape of any fluids which should be passed out from the wounded surface.
>
> "The convalescence was uninterrupted."

The description of the operation is very imperfect, yet I think it will not be difficult for the reader to follow it understandingly. The steps of the operation are: 1. The dilatation of the vagina by Sims's speculum. I believe Simon's position and retractors would be better. 2. Fixing and traction of the uterus downward. 3. Incision of the posterior vaginal wall, which should be in the central line and extend from the cervix to the recto-vaginal attachment. 4. Bringing the fundus uteri down through the vaginal opening by vulsellum forceps. 5. Ligating the posterior border of the broad ligament near the cervix uteri, so as to include the Fallopian tubes, ovarian ligaments, and accompanying arteries. 6. Separation of the anterior surface of the uterus from the bladder.

The first two steps of the operation need no further description than is given in the quotation. In the third step of the operation a fold in the centre of the posterior wall of the vagina should be drawn forward by the tenaculum, and incised with scissors. The incision should be perpendicular with, instead of across, the vagina, and large enough to admit the finger, by which we should be guided in completing the opening from the cervix to the attachment with the rectum.

What we are to avoid in making this incision is the wounding of a loop of intestine or projection of omentum, which may occupy the posterior cul-de-sac, and, while dividing low enough, not to wound the rectum. The fourth will be facilitated by traction on the cervix, which will bring the fundus downward and forward within reach of the finger, and then permit the uterus to be retroverted within reach of the forceps. Drawing the fundus forward, up well toward the pubis, will so twist and condense the posterior portion of the broad ligament as to make the fifth step easy of accomplishment. With the posterior border of the broad ligament thus brought forward we can easily pass the needle containing the ligature from the vagina backward, or from behind forward, and secure the arteries with great facility.

Without some caution another danger is that of including the ureters in the ligatures. The ureters approach the neck of the uterus in passing to the bladder, and at the anterior part of the cervix are within less than three lines. The ligature, therefore, should not be more than one-quarter of an inch from the cervix.

The most difficult part of the operation is the separation of the uterus from the bladder. The fibrous coat of the bladder, where it is attached to the uterus, is very thin, and great care is required in separating it from the uterus not to open the bladder. The direction given by Freund should be remembered. He recommends making an incision across the anterior surface of the uterus, through the peritoneum and connective tissue. Then by means of the finger or handle of the scalpel, strip the bladder off from the uterus. When the point of vaginal attachment to the uterus is reached it may be carefully separated with the knife or scissors. The separation of the neck from the vaginal attachment and the side will be easy after the bladder is isolated.

It seems to me that the operation of Dr. Lane would have had a better conclusion if he had closed the wound either with silk or wire sutures. The most of the large opening ought certainly to be closed in this way, and if the operation is performed under carbolized spray it would be better thus to unite the whole of it.

Should we desire to amputate the body from the cervix this method of bringing the uterus out of the peritoneal cavity would give us an excellent opportunity with the minimum risk.

A question very naturally presents itself in this connection, Should we leave the ovaries in the pelvis after removing the uterus?

Redner explains how the favorable results in ovariotomy led also to the removal of myoma and carcinoma of the uterus by laparotomy, and then how more recently the unfavorable results of the method of operating advocated by Freund led to a neglect of laparotomy. This change was favored also by the fact that the large number of cancers springing from the cervix uteri could only be removed imperfectly and with difficulty by this method, hence we have drifted back to the older practice of attacking the organ through the vagina. Redner himself operated several years ago in twenty-eight cases of carcinoma uteri through the vaginal wall, with almost invariable success (only three deaths, two by infection, one by hæmorrhage), by supravaginal excision of the cervix. And once having gone so far it was but a step to remove the whole uterus through the vagina. This procedure has recently been carried out almost simultaneously by Billroth, Czerney, and Schroeder. Redner himself has operated in this manner on six cases within the last month, and his assistant, Hofmeyer, operated successfully, in a clinic, a seventh one. Out of these seven cases only one patient died, of internal hæmorrhage from a rupture of the ligamentum laterum uteri.

Schroeder gives a short description of the steps of the operation. A Museux forceps is fastened upon each lip, the vaginal wall cut through, and all connection with the bladder broken up by the finger, in order to avoid any injury of the ureters allowing them to escape upwards; then, through an incision into the cul-de-sac of Douglas, the posterior connections of the uterus are severed and the uterus turned out through the opening, drawn down by means of the forceps, and cut off near the ligamentum lata. The arteries, which are thereby very much stretched, must be ligated. The ovaries and tubes are not taken out by Schroeder, because otherwise the ligament-stumps (especially the ligamentum infundibulo pelvicum) become so short that their ligation is very difficult, and secondary hæmorrhage liable to occur. He ligates the vessels of the ligaments *en masse*, sews the stumps to each side of the vaginal incision, and carries a drainage-tube through between them. After the necessary cleansing the antiseptic bandage is applied.

The *prognosis* is not only considered good by Schroeder because the mortality figure is so small, but also because the convalescence is so rapid and easy, for in the cases cited only two showed slight fever and two others mild symptoms of collapse.

As to the *indications* for such operative measures, Schroeder advises against interference when the cellular tissue of the pelvis is already invaded by cancer, which must be determined by careful palpation. He further calls attention to the fact that the larger the diseased uterus the greater will be the difficulties by this method, and the more appropriate will Freund's procedure become, and, at the same time, that in cases of cancer of the cervix situated low down we should be more conservative in either enucleation or supravaginal excision; yet after all, notwithstanding all of the advantages of the new procedure, the former methods would still retain their merits, according as they might be selected in particular cases.

In Martin's three cases he found such difficulty that in only one case was the operation complete. 2d case: Impossible to sever all adhesions; portion of diseased tissue remained behind. 3d case: Same kind of difficulty; conclusion that firm adhesions and brittleness or friability of the uterus contraindicate the operation.

Interrogated by Meyerbeer, Schroeder says he closes the vaginal opening with curved needle and silk, but recommends ligation of ligaments by wire.

Baum (of Danzig) says he formerly operated successfully by supravaginal incision seven times, without resulting fever, that in only two cases had he failed to find a return, but in the last few months had operated per vaginam four times, two of the cases resulting in death from shock and septic peritonitis. He operated after Billroth's manner, and in one case removed the ovarian tubes, but applied no sutures in order to allow better drainage of the secretions. A drainage-tube was introduced, through which, in case of fever, the parts were washed out.

Schroeder favors sutures which do not render septicæmia more liable and insure against protrusion of intestines.*

Baum prefers his method, and thinks protrusion of intestine can be prevented by position.

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* Paper read by Schroeder (Berlin) on "Total Extirpation of the Uterus per Vaginam" in the gynæcological section of the fifty-third Versammlung der deutsche Naturforscher und Aerzte in Danzig, in September, 1880. Reported in the Archives ᐧuer Gynæcologie Sechszehnter Band, Drittes Heft.

CHAPTER XXXII.

SARCOMA.

ANOTHER variety of malignant disease of the uterus is sarcoma. It generally shows itself in the form of a tumor, developed at the expense of the fibrous structure of the uterus, an apparently isolated portion of which is infiltrated by an abundance of peculiar cells.

While not encapsulated, like the fibrous tumors, these growths displace the surrounding tissue, and protrude in a submucous or subserous direction until they become, to a greater or less degree, pediculated. When first discovered and described these tumors were denominated recurrent fibroids, because ablation did not destroy them. Their recurrence is, doubtless, due to the fact that, while apparently isolated, the neighboring tissues are permeated by the sarcomatous cells. Instances of diffuse sarcoma are also sometimes met with when all the tissues of the entire uterus are infiltrated.

The cases of diffuse sarcoma with which I have met have all belonged to the small-celled variety, and the process of degeneration has spread from the uterus to the surrounding tissues, invading especially the connective tissue of the broad ligament. Sarcoma is a less frequent disease than carcinoma or epithelioma.

Symptoms.

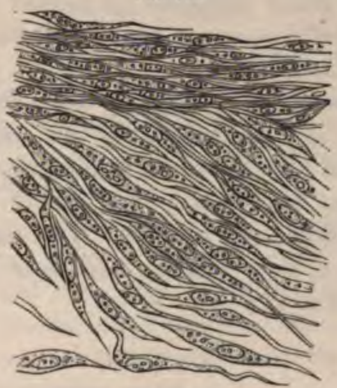
Its early clinical history is very similar to that of the fibrous tumor, and is more generally mistaken for it than any other growth. Serous leucorrhœa, metrorrhagia, and enlargement are the main ones. Its course is usually rapid, less so, perhaps, than cancer, and more so than fibrous growths. In some cases it attains to a large size before any peculiar phenomena appear. After a time, especially if submucous or polypoid, it begins to break down, the discharge becomes offensive and copious, and the disease proves fatal in much the same way as cancer.

The general symptoms in the early periods of development are not marked, and they only become so after the tumor has grown large enough to interfere by pressure with the fecal and urinary excretions, or in breaking up furnish septic material in such quantities as to induce septicæmia, when all the disastrous symptoms of that formidable fever are established. Thus diarrhœa, copious perspiration, elevated temperature, rapid pulse, failure of the assimilative functions, and great nervous prostration tend to a fatal issue with as much certainty as any other of the malignant affections.

Diagnosis.

In the commencement it is always difficult to arrive at a correct diagnosis. The symptoms are not characteristic, and until the commencing dissolution of the tumor are as much like those of fibrous tumor as they are like carcinoma, and when disintegration begins they thoroughly simulate cancer or epithelioma. The only sure diagnostic sign of sarcoma is afforded by the microscope. A portion of the tumor should be submitted to microscopic examination, when the characteristic cell may at once be discovered (Fig. 145).

FIG. 145.



From Cornil and Ranvier.

Mr. Butlin* makes the following histologic distinction between sarcoma and carcinoma. He says:

> "I should, then, define carcinoma to be a tumor of epithelial origin, having generally an alveolar structure, and sarcoma a tumor of connective tissue origin, formed generally of embryonic tissues, and without alveolar structure. And, for the minor differences, the cells of carcinoma generally resemble those of the epithelium from which it grows; there is little intercellular tissue; the vessels run in the fibrous tissues, not among the cells; and multiplications of cells is by endogenous formation. On the other hand, sarcoma is composed of round or fusiform or giant cells, and these are packed, in a more or less abundant basis; the vessels are often mere fissures between the cells, and the cells increase in

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* Lectures on the Relation of Sarcoma to Carcinoma, by Henry Trentham Butlin, F.R.C.S. American reprint. London Lancet, February, 1881.

number by division. These minor characters are common, but they are not constant. One or other of them may be absent in a tumor of either class; or, worse, may be present in a tumor of the other class. More commonly it is sarcoma, which simulates the appearance of carcinoma; but, fortunately, this feigning takes place most often in textures where there can be no question of the origin, and therefore of the nature, of the tumor. The alveolar structure, found in some sarcomas, is rarely so perfect as that of most epithelial tumors; indeed, careful study discovers that the tissue which surrounds the alveoli is generally formed of spindle cells. There is, in most cases, no real difficulty in assigning each tumor to its class."

Prognosis.

The prognosis is no more favorable than that of cancer. While in many instances the tumor caused by the morbid growth seems to be quite isolated, the cells penetrate the surrounding tissue to such an extent as not to be eradicable.

The contamination of the surrounding tissue does not seem to take place by absorption and transmission of the cells, or débris of the sarcomatous cells, but to be due to the insinuation of the cells into the contiguous substance surrounding the growth. It is, probably, always local in its origin and progress. This consideration, if true, would encourage us to hope that, by ablation of *all* the morbid substance, we might arrive at a cure.

Treatment.

To be radical the treatment should consist of the entire removal of the growth. I have seen no cases in which any operation has resulted in more than temporary benefit. When the disease is confined to the uterus, I think the most rational treatment would be the removal of that organ. Hysterectomy would seem to me to be more promising in sarcoma than in carcinoma.

In addition to the general palliative treatment, detailed under the head of cancer, the removal of sloughing masses by the curette and scoop, we will often derive great benefit from the free administration of ergot. The contraction of the uterus, under the influence of ergot, will do more to clear out the softening mass from its cavity than any instrumental interference. I have in several instances removed the sarcomatous growth by ergot so thoroughly that the improvement of the patients' health led them to hope for ultimate recovery. When the growth is submucous, and of the most friable variety, I would fully expect it to be expelled by ergot. It does not, however, affect the spread of the growth, and ultimate fatal result.

CHAPTER XXXIII.

TUMORS OF THE UTERUS.

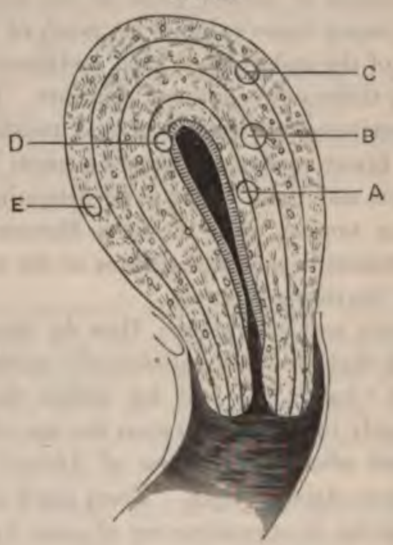
Any organized growth within the substance of the uterine walls, or depending from or connected with any of its surfaces, may be called a tumor. This definition will include polypi of all varieties and sizes, from the mere granule that renders the mucous surface irregular by its protrusion, to the growth which fills up the uterine cavity.

Fibrous Tumors.

Fibrous tumors of the uterus are homologous growths. They are not pure hypertrophies of certain parts of the uterine tissues. As proof of this the tumor-tissue exhibits too much of the rudimentary character of fibres of the undeveloped kind, and there is not a uniform proportion of the different constituent elements. For instance, we find that some specimens are quite firm and resisting, while others are frail. In the firmer variety, the fibrous element is more abundant than the connective, and these ought to be denominated myomatous or muscular fibrous tumors, while the term fibroma would be better adapted to those tumors in which the fibres of the connective tissues preponderate, and the tumor is softer.

The question very naturally arises: How do those tumors originate? A question that cannot be satisfactorily answered. What we know about their "habits" I will lay before the reader. They occur more frequently in persons between the age of thirty-five and fifty, and are found oftener in women of African descent than in those of European or Asiatic origin. From much observation I am also persuaded that the long continuance of great hyperæmia of the uterus strongly predisposes patients to fibrous tumors. Hence, we find them connected with sterility, dysmenorrhœa and menorrhagia. I know that these conditions are often the results of fibrous degeneration, but I have had opportunity of watching many such morbid states of the uterus, which, while giving rise to other symptoms, were constantly attended with hyperæmia. In some such cases after years of suffering tumors were developed. One remarkable instance is in a patient who has been under my eye for fifteen years. She is a maiden lady, now forty years of age. A few years after she commenced to menstruate, she became subject to hyperæsthesia and hyperæmia of the uterus. Although I saw her, and made examination of the uterus several times a year during these fifteen years, I discovered nothing which induced me to suspect fibrous growth until three years ago. Then I could easily make out a tumor, with two nuclei of development in the anterior wall of the uterus. When first noticed, the tumor was half as large as an orange. It grew to four times that size in the next twelve months. I have seen so many cases similar to this that I cannot believe hyperæmia and the development of the tumor to be a mere coincidence. We know that prolonged hyperæmia is one of the necessary conditions of hypertrophy, and it is hardly possible to have hypertrophy without hyperplasia. It would seem, indeed, to be the hypertrophy of the vortices or foci of muscular gyrations in the undeveloped condition of the fibrous structure which leads to the formation of these tumors.

Fig. 146.



All fibrous tumors of the uterus have their origin in the wall of the organ. Some arise immediately in contact with the mucous membrane, then begin to intrude themselves into the cavity of the uterus as soon as they begin to grow, and become pediculated while yet small, D. Others commence their growth beneath a very thin layer of fibres, A. These are quite near the mucous membrane, but not in immediate contact with it. They very soon overcome the resistance of the thin layer of fibres, and pushing the mucous membrane before them, become pediculated later in their growth. If, however, they are deeper in the wall, but nearer the mucous than the serous surface, the larger part of their bulk encroaches gradually upon the interior of the uterus, forming broad tumors that fill the cavity. They can easily be recognized by the finger after dilating the cervical canal. All of these varieties are submucous tumors, but in common professional language the first two are called polypi, while to the last the term submucous tumor is generally given. The term intramural is used to indicate the tumor that arises in the centre of the uterine wall, B; a tumor which in its development displaces the surrounding tissues alike in every direction. In point of fact the exact central mural tumor is very rare, the great majority having their nidus external or internal to the central layer. The subserous tumor varies in its relative distance from the peritoneal surface in the same manner as the submucous from the lining membrane of the uterus. Hence, some of them spring from the outer surface of the uterine wall, are suspended by a very slender pedicle, and covered only by the peritoneum, E. Others are not so pendulous, but still are enveloped by only a very thin layer of fibres externally. If they are still more remote from the peritoneal surface, they merely show themselves as bulky protuberances on the outside of the uterus, C. One more statement with reference to position. They are usually developed in the wall of the body, and comparatively seldom have their origin in the cervical portion of the uterus. This statement is true of every variety.

Their Nature.

A dissection of these tumors enables us to discover that they are surrounded in most instances by a well-marked capsule. It ought not to be called a cyst, for it has not a separate organization, and it is formed by the tissues surrounding the tumor, being compressed as they are displaced, until the inner surface of the cavity becomes smooth. At a number of points the capsule and surface of the growth are connected by frail fibrillæ and vessels. The number and magnitude of these connecting fibres and vessels vary, but it is exceedingly uncommon for vessels of considerable size to enter any of these tumors, and the vascular supply is proportionately small. From these facts the logical deductions, namely, that fibrous tumors of the uterus are of slow growth, of low vitality, and not usually reproduced from their capsule, are corroborated by observation. The source of their nutrition, or their vascular supply, is diffuse, coming through many small channels at various points in their periphery, and not, as in the ovarian tumors, from one great artery. Such a supply is the cause of a somewhat definite period of vitality. It is not capable of maintaining the growth to an indefinite degree, and a disturbance of its nutrition may easily occur. Thus, after they attain a certain magnitude, they are likely to stop growing, and in many instances they degenerate into a lower form of tissue, resembling cartilage, or even to descend still lower in the scale of vitality, and be partially changed into a cretaceous deposit. Again, their low vitality subjects them to the process of inflammation or eremacausis. Inflammation, resulting in gangrenous disintegration, is one of the accidents that sometimes brings about their discharge and cure. At other times it occasions the death of the patient during the complicated consequences thus arising. I have witnessed both of these terminations. The fibrous tumor of the uterus is frequently multiple.

The position occupied by the growth is accompanied by a number of important effects. When situated in the centre of the wall—intramural—it grows more rapidly than when in the subserous portion of the fibrous structure, but probably not so vigorously as when nearer the mucous membrane, or when it belongs to the submucous variety. In fact it will generally be found that the nearer the peritoneum the nucleus of origin, the more slowly will the tumor increase in size. We also find that the intramural and submucous varieties cause the uterus to grow and become vascular with much greater certainty than the subserous. Indeed, we often find very large subserous tumors growing from a uterus of comparatively small dimensions. The tumor may be not less than ten times the size of the organ to the fundus of which it is attached. If a tumor of this size were developed in the centre of the wall of the body of the uterus, the depth of the cavity would be not less than six inches. While the uterus in such cases is more than ordinarily vascular, it is not so much so as it would have been if the tumor had belonged to the intramural variety. Of course the polypous, or submucous tumor, develops the uterus with more uniformity than the intramural variety. The uterus, in the cavity of which there is a polypus, grows with nearly the same symmetry as if pregnant.

It logically follows from these facts that the submucous and intramural varieties are the most mischievous, as the more rapidly the uterus grows, the more certainly will it do mischief by pressure; and the more vascular the uterus becomes, the more hæmorrhage will occur. And we find from observation that these inferences are correct.

Again we find that developed in certain zones of the organ their behavior and effects are different. Fibrous tumors comparatively do not often originate in the cervical portion of the organ, and when they do their growth is not very rapid, nor do they cause the uterus to become very large. In the corporal zone they grow most rapidly, cause the uterus to enlarge faster, and do more mischief. Lastly, in the fundus their activity of growth is less rapid, and produce less morbid changes upon the organ.

In examining uteri containing fibrous tumors, which have fallen under my observation, I have noticed that the character, as well as the degree of its development, has varied quite considerably.

The growth of the fibrous structure of the uterus is not exactly the same in character and degree as in pregnancy. The fibres are certainly enlarged, and they become muscular, but in very few localities do they attain to the same perfection as in pregnancy.

In the subserous variety they do not anywhere attain to the perfection of pregnancy, and are usually quite rudimentary in their character. Nor do they possess much contractile power. In the intramural tumors the fibres surrounding the growth attain much greater dimensions, and acquire great power. Seldom, if ever, however, do they assume all the qualities of the fibres in the gravid uterus at term. In these cases the fibres in the opposite wall do not keep pace with those surrounding the tumor. In the submucous variety the fibres external to the tumor in the same side in which they originate are largely developed, while those between the tumor and mucous membrane attain considerable length, but are attenuated, and lack strength. This is *one* reason why they are pushed into the cavity of the uterus.

When the tumor is polypoid, and occupies the cavity of the uterus, especially if it comes from the body near the fundus, filling up and distending the cavity of the body in every direction, it causes great uniformity of development of the fibres. The fibres all around grow more as they do in the pregnant uterus, attain great power, and usually expel the growth into the vagina.

Very nearly the same statements may be made in reference to the growth of the vascular system in the different varieties of tumors. The vessels are more enlarged on the side occupied by the tumor in the intramural and subserous than on the unoccupied side. They are more *generally* enlarged in the intrauterine polypus.

It may be further stated that a single tumor grows more rapidly, causes greater vascularity in the uterus, and brings about greater hypertrophy of the fibres of the uterus than the multinuclear form. Indeed, were numerous points of growth to commence at the same time, although great bulk may be attained, the bulk consists in the morbid deposits more than in the growth of the physiological structure of the uterus. This is so markedly the case that after a certain time this kind of tumor stops growing for the want of vascular supply, and becomes transformed into a dense tissue of a vitality far below that in the single tumor. It sometimes becomes a true fibroid degeneration of the whole uterus, in which it would be hard to trace any of the anatomical elements peculiar to that organ.

Symptoms.

From this exposition of the growth and effects of tumors upon the surrounding structures, it will be readily inferred that the symptoms observed in connection with fibrous tumors of the uterus are not the same, and must vary greatly in the different varieties. The most frequent symptom is hæmorrhage, either at the time of menstruation or during the intervals. In the early periods of the growth the patient will observe profuseness in the menstrual flow, and some cases occur in which this is the only time when there is loss of blood, but in very many instances the losses take place at irregular intervals, and sometimes the discharge is so irregular that the patient will lose her knowledge of the time when she ought to be unwell. In quite a large proportion of cases there is no deviation from the ordinary habit of menstruation. The patient is regular.

The variations of this hæmorrhagic symptom conform, in general, to well-known conditions, and we may expect to find the hæmorrhage more profuse the nearer the tumor is situated to the mucous membrane. In hæmorrhagic cases we shall also find that the size of the tumor has much to do with the flow. The larger the tumor, other things being equal, the greater the hæmorrhage. Large submucous tumors will, therefore, cause more profuse hæmorrhage than any other sort. In estimating the value of the rule in the correspondence of these conditions, we must remember the frequent coexistence of small submucous with large subserous tumors, and that, as there are exceptions to all rules, we may sometimes have profuse hæmorrhage in subserous, and small losses in submucous tumors. The latter exception, however, is very rare.

Leucorrhœa, consisting of thick, tenacious mucus, from the cervical cavity, is perhaps the next most frequent symptom, and it is generally governed by the same rules with respect to frequency and profuseness as metrorrhagia, being greater in quantity in submucous than subserous tumors.

Watery discharges from the uterus are also a common and significant symptom. They occur more frequently just after, and appear to be supplemental to, the hæmorrhages; and I must observe with reference to them, also, that they are usually more profuse in submucous tumors. It will be observed that all the discharges—hæmorrhagic, leucorrhœal, and watery—show themselves under the same circumstances, and there is a very good reason for this, which I mention in passing. The cases in which the tumors are so situated as to greatly increase the vascularity of the uterus, are also the cases in which these discharges are more profuse.

Dysmenorrhœa is not so commonly met with as the three symptoms already mentioned. When it does occur it is of the obstructive variety. It is manifested by cramping pain recurring at intervals. We may account for its assuming this phase by the fact that the tumor encroaches upon the cavity of the uterus and renders it tortuous, and in some cases occludes it by forcibly pressing the sides together. The blood is accumulated above these obstructed places, and the pains are caused by the efforts of the uterus to expel the blood thus imprisoned.

The subserous tumor is the only kind that may not occasionally cause dysmenorrhœa. It is probably more frequently present where there is a number of nuclei of development, some of them being submucous.

Among other symptoms, I wish particularly to call attention to that of *pressure*. It begins very early in the progress of these growths, and is quite often noticed. The first evidence of pressure is suffering in the pelvis. When the tumor first becomes enlarged, the uterus presses upon the perinæum, and this pressure causes a feeling of unusual weight in that region. This "bearing-down sensation" may increase until, finally, the uterus and vagina may protrude through the vulva; the womb may also fall backwards upon the rectum and produce tenesmus or other uneasiness in that organ; and not unusually hæmorrhoids are thus developed with their attendant symptoms. Should anteversion occur, the bladder will suffer from the pressure in the various forms of dysuria, and even inflammation in that viscus. When the tumor is located in the posterior wall, the uterus is retroverted; when in the anterior, it is anteverted. When the organ is enlarged equally in all directions, it will be prolapsed. As it enlarges so as to fill up the pelvis, the pelvic veins are sometimes so pressed upon as to retard their circulation, and there may arise varicosity in the legs, anus, vulva, and surrounding parts. The nerves suffer from the pressure in such a way as often to manifest sciatica, and crural and vulvar neuralgia.

When the tumor is large enough to rise out of the pelvis, it may cause pressure upon the abdominal viscera, and by its bulk, hardness, and irregular shape give rise to great inconvenience from distension of the abdominal cavity, producing more suffering than the same distension from most other causes.

Several important complications are likely to result from pressure, such as inflammation of the pelvic viscera, cystitis, rectitis, cellulitis, and local peritonitis. I need not stop to give the symptoms of these complications, as they are the same as when arising from other causes. The pelvic inflammation sometimes extends to the veins passing through the cavity, and gives rise to phlegmasia alba dolens.

Abdominal inflammations also complicate these cases, some forms of peritonitis especially. A moderate peritoneal inflammation may result in serous effusion, and the ascites sometimes gives rise to more trouble than the tumor, being in some cases the immediate cause of the fatal result.

The consideration of the effects caused by pressure exerted by these tumors leads me to the subject of their progress and development.

It may be said of them, in a general way, that their growth is slow. This is especially so as compared with most other growths. In very many cases it requires years for them to attain a magnitude sufficient to endanger the patient's life. Indeed, some patients carry them through a long life without experiencing more than a slight inconvenience. Occasionally exceptional instances occur, however, in which the growth is rapid and very destructive.

The conditions which promote their growth are now pretty well understood, especially the general proposition: that the more vascular the uterus becomes from any cause the more rapid their growth. The converse of this statement becomes a necessary corollary.

They grow rapidly during pregnancy. During the period of life in which the menstrual discharges occur in a normal way, the tumor grows more rapidly than after the menopause. The submucous increase in size with more rapidity than the subserous, and the tumor centrally located in the uterine wall generally requires for its development a period of time which may be regarded as a mean between the other two. The multiple ones advance more slowly than the single tumors. There is one circumstance which may add greatly to the vitality of any of these growths, and consequently cause them to grow with great energy. I allude to adhesions to the visceral or parietal peritoneum. When extensive adhesions occur, the vessel of the adherent surface penetrates the uterine tissue and greatly increases its vascularity. This is so remarkably the case in rare instances, that the peritoneal surface of the tumor becomes reticulated with large vessels. The growths thus usually become very formidable. Occasionally, tumors that have grown so slowly as to seem stationary in this respect, suddenly start up, and their behavior is entirely changed. We see this in subserous tumors in a remarkable manner. It is hardly necessary for me to remind the reader that this change is generally preceded by inflammation, and that this is the cause of adhesions.

When the tumors, as sometimes happens, undergo interstitial degeneration in such a manner as to cause cavities in their substance, they grow rapidly by an accumulation of fluid in these hollow spaces. This change constitutes a new variety, which is called fibro-cystic. They often become very large, grow very rapidly, and are mistaken for ovarian tumors. Some of our most expert specialists have been betrayed into their removal under this misapprehension, and have been made aware of their mistake only after a careful examination subsequent to their extirpation.

Diagnosis.

We learn, after much observation, that the history and symptoms, although very important items in the diagnosis, are not sufficient to establish it, hence we are obliged to resort to physical examination. Another observation may be made in this connection; the greatest difficulties in forming a correct diagnosis will be experienced in tumors of each extreme in size. The medium-sized tumors may be diagnosed without much trouble. In cases of small-sized tumors we cannot always determine without much care whether the enlargement of the uterus is due to a tumor or some other cause. In such cases the depth of the uterus should be measured by the sound. While the sound is in the uterus, and that organ held in its normal position, the finger is to be passed as high as possible into the rectum, and the posterior wall thoroughly explored. If there is a tumor in that part it will be found thickened and nodulated. Should this not be the case a male catheter should be introduced into the bladder, and the anterior wall of the uterus carefully surveyed. If the symptoms are sufficiently grave to excite apprehensions, and yet leave an uncertainty, the finger may be passed into the bladder instead of the catheter; otherwise it should not be used.

To ascertain the existence of a small intrauterine or submucous growth the cervix should be dilated with sea-tangle, or compressed sponge-tent, until the finger can be passed into the cavity of the body, when there will be no difficulty in finding the tumor. None of these proceedings are justifiable, if there is tenderness or other signs of general inflammation of the uterus.

It is more frequently the case that the tumor is evident, and then the object is to ascertain if it is uterine. To determine this question it is necessary to discover its attachments. This may be done by placing one finger on the mouth of the uterus, and another in the rectum to move the tumor. If it is attached to the uterus they will move together. We should be careful, in making this kind of an examination, to make the movements vary in direction; if possible, the tumor should be moved from the uterus, or upward, or downward. The tumor ought to carry the uterus with it when moved in any direction. If the sound is passed into the uterus, and the tumor moved afterwards, the instrument, as may be seen, will very plainly indicate the movement of the organ. The cavity will also be increased in length. When a tumor is large enough to be felt above the pubis the attachment will be more easily made out by moving it with the hands pressed upon it from above, while the sound is in the cavity, or the finger on the cervix.

The second most important diagnostic indication is the firmness of the tumor. The fibrous tumor is usually hard and not elastic. Another almost essential circumstance has just been alluded to, viz., the increased depth of the uterine cavity. The history of the case will generally enable us to decide, whether the tumor under examination is one caused by inflammation or not; the inflammatory tumor moreover is seldom movable. A hæmatocele is behind the uterus, is elastic, and has the shape of the cul-de-sac, instead of being globular.

When the tumor is large enough to fill up the abdominal cavity, and become immovable in consequence of its bulk, it is not always but usually elastic. If so, it has become fibro-cystic. We cannot always determine the relation of these tumors to the uterus by the methods I have described. Often we are unable to introduce a sound into the uterine cavity, in consequence of its tortuous direction, and the diagnosis becomes extremely difficult. These are the tumors, as I have before said, that have been mistaken for and removed as ovarian tumors. Probably the only positive way of clearing up the diagnosis, is to draw off some of the fluid with a trocar, or aspirator, and make *its character* the test. Dr. Washington L. Atlee, of Philadelphia, in his admirable work on the diagnosis of ovarian tumors, has furnished us with a description of the fluid derived from this kind of fibrous tumor, that is every way correct. The fluid does not run out of the canula of the trocar with the facility with which the ovarian fluid is evacuated, and often when it is received in a vessel, and becomes somewhat cool, it coagulates, and like blood separates into clot and serum. When examined by the microscope, debris of blood-corpuscles and fibrillæ of fibrin are the characteristic substances found. One other circumstance I have failed to call attention to is, that fluctuation observed upon percussion is less decided than in ovarian tumors. If the tumor is large enough to distend the abdomen, it may be complicated with peritoneal dropsy. This condition also renders the diagnosis obscure. Tapping will generally enable us to arrive at correct conclusions. After the ascitic fluid has been removed, an examination of the tumor will enable us to establish its relations to the uterus, as well as determine its density and shape. The fluid in these cases should be submitted to microscopic examination with a view to ascertain whether it came from an ovarian cyst or the peritoneal cavity.

Prognosis.

There are several considerations which render the general prognosis favorable as compared with other tumors for which they may be mistaken.

They occur generally in persons who have made a near approach to the menopause, and generally they cease growing after this condition is passed. They grow slowly, and may not be expected to arrive at dimensions sufficiently great to cause fatal consequences for many years, if ever. They often stop growing without any discoverable reason; they sometimes undergo degeneration into inert masses, which remain as mere inconvenient bodies. Nature sometimes gets rid of them by expulsion, or they may be protruded from the uterus into the vagina, within reach of surgical measures. Lastly, many of them disappear under judicious medical treatment, or all the threatening symptoms attendant upon them may be removed by such means.

Almost none of these conditions obtain in ovarian tumors and very few in any others found in the same locality. These considerations will establish the conclusion that the general prognosis is favorable.

The circumstances which in individual cases form an unfavorable prognosis are: the youth of the patient, as they usually grow more rapidly in young persons; the rapid growth of the tumor; hæmorrhagic symptoms; unfavorable complications, as peritoneal dropsy, inflammation in the pelvis or abdomen, pressure upon the pelvic organs, nerves, or vessels; inflammation of the tumor, impaction in the pelvis, uræmia, anæmia, pregnancy, ovarian tumor, etc. The fibrocystic variety possesses several elements of danger; its rapidity of growth being the cause of several others, as pressure, impaction, dropsy, etc.

The complications of pregnancy and labor with fibrous tumors of the uterus is one of sufficient importance to demand special consideration, especially as we may be obliged to determine a course of action when the emergency leaves no time for research. The simple coexistence of a fibrous tumor with pregnancy is not sufficient reason for interference, and I am persuaded from personal observation that there are but few cases which call for any interference whatever.

I do not wish to be dogmatic, but I desire to make a few definite statements of what I regard as facts. Pregnancy takes place more frequently when the tumor is situated in the central zone of the uterus and remote from the mucous membrane; but it will not occur if the tumor belongs to the submucous variety, although it is in the middle, or even in any part of the uterus except the cervical portion of the inferior zone. I have already intimated that there are very few large tumors developed in the inferior or cervical zone compared with those that arise from the central corporeal and superior or fundal zone, and that such as these are usually developed in the submucous tissue and are generally pendulous—these do not appear to interfere very much with pregnancy. From what I can learn and have observed pregnancy seldom, if ever, takes place when the tumor, being of more than moderate size or situated near the mucous membrane, is located in the fundus or upper portion of the superior zone. In general the larger the tumor the less likelihood of pregnancy, and if it does occur the impossibility of normal uterine development leads to abortion.

The dangers to be apprehended arise usually at the time of labor and consists: 1, In the obstruction to delivery caused by the tumor blocking up the pelvis; 2, in the incomplete contraction after delivery failing to close up the placental vessels, and thus causing grave, if not fatal, hæmorrhage. Tumors situated in the superior zone, the middle zone, or the upper portion of the inferior zone will offer little obstruction, because the head will have passed them above the pelvic brim. This leaves but a limited number and those small in size that are crowded down into the pelvis by the side of or before the fetal head; they are the submucous or polypoid variety situated in the cervical portion of the inferior zone. Such tumors are generally pressed entirely out of the vulva and permit the head to pass out after them. I may mention, in passing, that they may sometimes be detached from their base by the pressure of the head; or, remaining intact, may be retracted within the pelvis after the labor is over.

The second danger is, I think, very much overrated. The fact of the fibrous tissue of the uterus having been developed sufficiently to permit of the completion of gestation is an evidence that it is sufficiently powerful to contract fully, and one single case recently published by Dr. Chadwick, of Boston, in which the placenta was implanted on the uterus over the seat of the tumor, and in which hæmorrhage did not prove serious after delivery, goes far to prove that great danger from this cause is not likely to occur. In no case of labor associated with a tumor which has come under my own observation has hæmorrhage been a grave symptom.

It is fair, I think, in the light of our present knowledge, to infer that it is seldom necessary to interrupt pregnancy when complicated with fibrous tumors of the uterus, as, in the nature of things, gestation will not continue unless there is sufficient integrity of uterine tissue to permit ample development. At the time of labor the indication for operative procedure will appear in the want of progress, and then the obstacles may be surmounted by turning, or forceps, if the propulsive powers of the uterus are not sufficient. Common prudence will incite to vigilance in preventing hæmorrhage in these as in other complicated cases of labor. It will be observed that while I cannot ignore the importance of watching these cases attentively, I am far from considering them as necessarily very dangerous.

Another question of great importance is, what effect does pregnancy and labor have upon the tumor?

In a minority of cases none whatever. The tumor remains the same after the pregnancy has terminated as before. But in the majority of cases it is far otherwise. In three instances of this nature, which have come under my own observation, the tumors have disappeared; and the manner of their disappearance is worthy of remark.

In one instance, occurring two years since, the tumor was located in the posterior wall of the uterus, apparently in the central portion of it, and occupied the middle zone. The pregnancy proceeded without accident, and the patient was delivered at term of a dead fœtus, which, judging from appearance, must have been dead three days before labor came on. Moreover, according to the calculation of the mother, the first pains did not appear until two weeks after the expiration of two hundred and eighty days. The head was arrested at the superior strait and impinged upon the symphysis pubis, but was easily moved from this position. I did not see the patient until four hours after the membranes had been ruptured. At this time the presenting part did not advance; and, after consultation with the attending physician, Dr. John F. Williams, of this city, it was considered best to interfere. I introduced my hand, seized one of the feet and brought it down. There was no great difficulty in the turning or delivery. The placenta came away in a few minutes with a very slight loss of blood. I had first seen this patient when gestation had advanced to the end of the third month. At this time I believed the tumor to be about the size of a fetal head at term. It was extremely hard, and presented two distinct nodules. At this consultation I advised non-interference. I saw her again several times during her pregnancy. She was a primipara. After the delivery of the placenta I felt curious to know what effect the pregnancy had upon the size and consistency of the tumor. In order to determine these points I introduced one hand into the uterus, and with the other manipulated above the symphysis. In this way I could fix and handle the tumor with facility. It then seemed to be about the size of the fetal head and very hard. The division between the firmly contracted uterus and the tumor was marked by a well-defined sulcus, traceable by the hand, above the pelvic brim. The tumor seemed harder than the contracted uterus. I had the opportunity of seeing and examining this patient frequently during the year succeeding her accouchement. The tumor was decidedly less in three months, and continued to disappear. At the expiration of twelve months it was no longer perceptible, and the cavity of the uterus measured but two inches and a quarter. The patient now menstruates normally in every respect.

The careful observation of this case convinced me that the tumor had not grown materially larger nor become softened during gestation, and led me to believe that the process of absorption began and proceeded with the subsequent involution of the uterus. What effects may have been wrought upon its tissues by the contractions during labor I cannot of course determine; but the gradual disappearance of the tumor and the non-appearance of inflammatory or other urgent symptoms plainly indicate that the contractions of the uterus during labor could not have produced any very violent effects upon it. It was also evident that the tumor was absorbed and slowly removed without disturbing the good health of the patient.

In the other two cases I verified the existence of fibrous tumors before pregnancy took place, and one of them I saw again after a lapse of five months, but was not present at the time of parturition of either of them, nor have I seen them subsequently. I have been assured, however, by letters from their attending physicians, that they recognized the tumor after labor, and that they both disappeared within a year.

CHAPTER XXXIV.

FIBROUS TUMORS OF THE UTERUS, CONTINUED.

Treatment.

THE treatment of fibrous tumors of the uterus consists largely of the means calculated to relieve such symptoms as endanger the life of the patient or materially affect her general health. When these are unavailing, resort is had to measures calculated to get rid of the tumor. Some remedies necessary to the relief of symptoms act as very powerful curative agents; hence, while it is convenient to speak of the treatment of symptoms under one division of the subject, and the methods employed for radical cure under another, we cannot, in fact, completely separate these two branches. The reader will not be surprised, therefore, if I feel myself obliged to depart from this arbitrary method of presenting my subject.

Hæmorrhage is by far the most important of the symptoms connected with these growths, because it is at the same time the most frequent and hazardous. It is also the symptom that leads to most suffering in consequence of depriving important organs of the blood necessary to support them in their functions. Every means, therefore, should be made use of not only to prevent fatal losses but also to prevent even slight hæmorrhage. In the outset, therefore, I would insist upon watching with great vigilance to prevent any unusual loss of blood. It will be understood by this that I advise not to temporize by adopting the milder and less efficient measures as being sufficient for cases not likely to prove fatal, but to treat all hæmorrhage arising from this cause with promptitude and energy. Fortunately in many cases we can anticipate the attacks of hæmorrhage because we know when they will recur, and we are generally able to judge of their probable severity. To discharge our duty in this respect effectually, our patient should be properly provided with remedies and fully instructed how to use them. She should be made to understand that unusual hæmorrhage at the menstrual period may be checked without endangering her general health. Among the remedies are, dorsal recumbency with the hips elevated, cold to the hypogastric region, and cold to the dorsal spine and sacrum, which can be effected by means of a rubber pillow filled with ice water, ergot and some form of tampon. The best fluid extract of ergot in drachm doses, if the stomach will bear it, is probably the most efficacious medicine, but the fresh drug in the form of infusion is also very efficient. Full doses should be given every half hour when there is much loss, until some effect is produced upon the hæmorrhage, and then continued every four hours as long as necessary. Compressed sponges saturated with the solution of alum make the best tampon for the patient to make use of. These may be made and kept in readiness, so that they can be introduced as soon as they are found necessary. The patient or nurse can make them by taking a fine sponge, large enough to fill the vagina, passing a piece of strong string through the centre to aid in its removal, and then, after dipping it in the solution, well winding it with twine from one end to the other, compressing it into as small a space as possible. The twine should so compress the sponge as to make it assume an elongated form. It should then be laid aside and permitted to dry. Several sponges should be thus prepared and dried. When necessary the twine may be unwound and the sponge introduced. Its size when in the dry condition will allow of an easy passage into the vagina, where the moisture will cause it to expand, thus filling up and sealing the vagina so as to absolutely check the discharges. If the attending physician is present he may tampon the vagina with pellets of cotton secured by thread and moistened with the solution of iron, as recommended by Dr. Sims and others. The inconvenience experienced from this ironized plug will be more than counterbalanced by the saving of blood. This form of tampon has the additional advantage of being antiseptic. I have allowed it to remain for three days, and upon removing it satisfied myself that there was no decomposition of the blood or the vaginal secretions. When the tampon is removed it will not be found difficult to wash out all the granular clots caused by its presence. It may be repeated as often as necessary, but usually if allowed to remain forty-eight hours the hæmorrhage will not return. It may be said that for small losses this is unnecessary, but I think this is a more convenient form of tampon than any other that will answer the purpose. In dangerous cases no one will question the propriety of its employment.

Another very important means of arresting hæmorrhage, which can be used by the physician when necessary, is the introduction of a compressed sponge into the cervix uteri for the purpose of dilating it. This will temporarily act as a tampon and stimulate the uterine fibres to contraction. A point of much importance in the use of the tampon or sponge, is the avoidance of septicæmic poison, and I know no medicine so efficacious and handy as the preparation of iron I have mentioned.

The pressure of the tumor upon the pelvic viscera is another inconvenience which calls for attention. This takes place usually at a time when the tumor has acquired a size sufficient to fill that cavity. Consequently the elevation of the tumor above the pelvis is the remedy. This may be done sometimes by placing the patient in the knee-elbow position and opening the vagina by two fingers, and then pressing the growth upwards. The powerful influence of atmospheric pressure called to our aid, by the position and opening of the vagina, is a very material auxiliary in the process of elevation. If this is not sufficient, we may pass the fingers into the rectum and elevate the tumor. I once succeeded in this operation by using an ivory-headed cane in the rectum when the fingers failed to reach high enough.

Dysmenorrhœa is another symptom of fibrous tumors, and sometimes a very distressing one, which we are often called upon to relieve. It depends, no doubt, as I have before said, on the imprisonment of blood in the uterine cavity, in consequence of the tortuosity of the canal causing the closure of some part of it. The remedy consists in dilating these narrow places. I know of nothing so well calculated to effect this object as the slippery elm tent. A tent of this material, long enough to reach the fundus uteri, and of sufficient size, moistened so as to render it very flexible, may be passed up through these tortuous places with great facility. If introduced as soon as the symptom begins to manifest itself, and allowed to remain an hour or two, the relief will be pretty certain. If used once a day, for four or five days before the attack, and three or four hours at a time, dysmenorrhœa may be generally avoided.

When we broach the question of the permanent cure of these affections, we find that great difference of opinion exists among the members of the profession as to the value of medicines. One part, perhaps a majority, believe that no medicine has any direct effect upon them, and they ignore any means of permanent relief but surgical. There is, however, a respectable number of medical men who place great reliance upon the administration of certain medicines, and, if I am not mistaken, recent observation has added greatly to their number. They do not, however, wholly agree as to the therapeutic processes that should be instituted, and consequently do not employ the same kind of medicines. Some gentlemen have more confidence in what I will term the sorbefacient process of treatment. They endeavor to institute measures that will cause the absorbents to attack and remove the neoplasm in the same way that tumefactions caused by effusions are removed. This they do by friction, pressure, and the administration of the old-fashioned sorbefacient medicines. The most popular among these are the iodides, chlorides, and bromides of mercury, potassium, sodium, calcium, and ammonium. Reports may be found in books and our periodical medical literature of cures by several, if not all, of these articles and their combinations. The late Dr. W. L. Atlee, whose experience has been very extensive, had great confidence in the action of hydrochlorate of ammonia. He caused it to be administered internally, applied externally, and used as vaginal injections. The iodide of potassium has long enjoyed a great reputation in causing the absorption of these and other forms of tumors. There is no professional fairness in assuming that the faith in these remedies, derived from the observation of their effects, or the promulgation of cures from the use of sorbefacient measures, are fallacious. Some of the men arrayed in favor of the opinion that cures may be effected by a patient, and long-continued administration of some one of the articles I have mentioned, stand high as men of honesty, accuracy of observation, and faithfulness in their records; and for one I give full credence to their statements. Yet I must also say that I have not witnessed the good results which I unhesitatingly believe others have seen from the sorbefacient treatment alone.

Others who expect much from medicinal treatment look to that class of medicines which causes contraction of the unstriped muscular fibres as the most promising. With these medicines they expect to diminish the supply of blood to the tumor, by causing contraction of the arterioles traversing their substance, and thus disturbing their nutrition to such a degree as to stop their growth, lessen or destroy their vitality, and so render them subject to the influence of the absorbents, whereby they may be removed. Some of the more energetic of these medicines, as ergot, for instance, often affect these growths very promptly.

I shall limit my remarks upon this class of medicines to what is known of the effects of ergot.

As an introduction to what I have to say of ergot I submit the following propositions: 1. When properly administered, ergot frequently very greatly ameliorates some of the troublesome and even dangerous symptoms of fibrous tumors of the uterus, *e. g.*, hæmorrhage and copious leucorrhœa. 2. It often arrests their growth and checks hæmorrhage. 3. In many instances it causes the absorption of the tumor, occasionally without giving the patient any inconvenience; at other times the removal of the tumor by absorption is attended by painful contractions and tenderness of the uterus. 4. By inducing uterine contraction it causes the expulsion of the polypoid variety. 5. In the same way it causes the disruption and discharge of the submucous tumor.

There are many cases on record to substantiate every one of these propositions.

From what I consider well-authenticated sources, including the cases under my own observation and in the practice of my friends and neighbors, I have collected one hundred and thirty-six cases of fibroid tumors treated by ergot. Of these, twenty-five cases were cured without giving the patient any inconvenience from painful contractions. In forty-six cases the tumors were diminished in size and the hæmorrhage was cured. In twenty-seven others the hæmorrhagic symptoms were relieved, while the size of the tumor was not affected. In eight other instances the tumors were broken to pieces and expelled piecemeal.

At the risk of being tedious I will copy the summary of cases and opinions reported to me and given in my address on obstetrics made before the American Medical Association in 1875:

Cases.

It is well known that Professor Hildebrandt, in a communication to the twenty-fifth number of the *Berliner Wöchenschrift*, as early as 1871 called the attention of the profession to the utility of ergotin in the treatment of fibrous tumors of the uterus. While administering it by hypodermic injections to moderate the hæmorrhages, so often a troublesome symptom in connection with these growths, he was struck with the decided diminution in the size of the tumor. A continuation of the remedy thus administered resulted in the entire disappearance of one of them in fifteen weeks. In eight cases, all but two underwent great improvement. The great pain caused by injection rendered the treatment intolerable to one of these two patients. In the other the treatment was discontinued on account of ergotic intoxication. In four others, the tumors were greatly diminished, and promised speedy cures, but for various reasons the treatment was not continued. One tumor of huge size, reaching above the umbilicus, totally disappeared; while another, extending to the ribs, and largely distending the abdomen, was greatly reduced. The debilitating hæmorrhages and leucorrhœal discharges were promptly relieved in six of them.

In the *American Journal of Obstetrics* for January, 1875, Dr. Hildebrandt gives a synopsis of nineteen more cases treated by him. Two of these were cured; and in six others the tumors were greatly diminished in size, and the hæmorrhages relieved. In eleven of these cases all the disagreeable symptoms were relieved, but the size of the tumor was not perceptibly affected. The last two cases reported in this series of nineteen were not benefited.

Soon after Professor Hildebrandt made his first report of cases, Dr. Bengelsdorf read a paper upon the subject at a meeting of the Griefswald Medical Society. He alluded to four cases in which he had used the hypodermic injections of ergot. Two of these were in patients after the menopause; neither of them seemed to be influenced by the treatment. In the other two the patients were menstruating and the subjects of severe metrorrhagia. This symptom in both cases was very much mitigated, but the tumors were not materially, if at all diminished in size. Treatment was interrupted in one of them after the administration of sixteen injections. Dr. Bengelsdorf was favorably impressed by the treatment.

Dr. Chrobak, of Vienna, reports, in the seventh volume, second number, of the *Archives für Gynæcologie*, nine cases. In the first, the tumor the size of a small apple was partially expelled from the cavity of the body into the cervical canal; the mouth of the uterus was dilated by sponge, and the protruding segment removed with the scissors. In case second, after forty-three injections, the tumor, which was situated in the posterior wall of the uterus, was not reduced in size, but the hæmorrhage was cured. The tumor in case third consisted of several nodules in the anterior wall of the uterus; after twenty-four injections, there was no diminution in size, but the hæmorrhage was cured. In case fourth the tumor was situated in the posterior wall and reached up to the umbilicus; after three injections the treatment was discontinued on account of the pain and inflammation caused by them. In the fifth case the amount of hæmorrhage was reduced, but the treatment was discontinued for the same reason as in case fourth. The tumor in case sixth was large, the uterus rising above the umbilicus; after twelve injections without results, the patient could not be induced to receive further treatment. The seventh patient was fifty-seven years old, and the tumor showed a multitudinous development; the second injection, which was administered eight days after the first, caused severe symptoms of collapse, and the treatment was discontinued. The tumor in the eighth case was in the anterior wall of the uterus and reached above the umbilicus, and the monthly flow continued from eight to ten days; seven injections were used, with diminution of the tumor and improvement in the hæmorrhages; the treatment in this case he expected to continue at some future time. In the ninth case the uterus was anteverted, and the cavity measured four and three-fourths inches in length; after twelve injections the hæmorrhages ceased and the tumor diminished in size; the uterine cavity measuring only three and one-third inches in length.

Dr. Lombe Atthill records three cases in the *Irish Hospital Gazette* for September 1st, 1874. The first case was benefited in the diminution of the flow and the improvement of health. The second case was under treatment but a very short time; only five injections were administered, when the patient refused to permit another because of the severe inflammation following them. The third case was benefited, but abandoned from the same cause.

Dr. J. P. White, of Buffalo, N. Y., writes me that he believes it is in this direction—the use of ergot—we must look for relief in the intramural and non-pediculated varieties of uterine fibroids. He says that in the last year and a half he has resorted to ergot in these varieties with marked benefit. In a few instances they have been completely absorbed, and in a larger number the growth of them was arrested, the tumors were diminished in size, and the hæmorrhages were suspended. He says that the number of his cases is fourteen, and that not more than one-third can be called cured, while in almost the same proportion, the growth has been stayed or diminished, and the bleeding arrested.

Dr. E. W. Jenks, of Detroit, Michigan, now of Chicago, in a recent letter, says he has used ergot during the past two years in the treatment of fibroid tumors of the uterus with the most gratifying results. Seventy-five per cent. of all cases thus treated were benefited, as manifested by arrest of growth and control of hæmorrhage. About ten per cent. of the patients he considered cured.

Dr. H. C. Howard, of Champaign, Ill., sends me an account of two cases treated by him. The first case was in an unmarried woman. The tumor was one originating from a single nucleus, intramural, and as large as a pint measure. He administered hypodermic injections of ergotin for some weeks, and afterward continued treatment for eight months by administering internally the fluid extract of ergot and belladonna. This case, he says, was entirely cured by his treatment. His second case was in the person of a married woman, forty years of age, and the mother of two children. When first seen by him she had been the subject of severe floodings for three years. He found, upon examination, a submucous fibroid as large as a quart cup. He used large quantities of ergot by vaginal injections and by the mouth for four months, at which time the tumor had entirely disappeared.

Dr. A. Reeves Jackson reported to the Chicago Society of Physicians and Surgeons, April 13th, 1874, five cases of fibrous tumors of the uterus treated by hypodermic injections of the solution of the solid extract of ergot. The tumors in four of these cases were intramural; in the fifth the tumor was subperitoneal. The tumor in one was entirely cured; in two others the tumors were greatly diminished in size. In another the tumor seemed unaffected, but the profuse hæmorrhages from which the patient suffered were diminished in frequency and profuseness. The fifth, a subperitoneal tumor, was not benefited.

Dr. Jackson reports to me three other cases. One was in a colored woman; the uterus reached to the umbilicus; it was entirely cured in three months. In the second the tumor reached above the umbilicus; this was temporarily reduced in size by the ergot, but, after treatment was abandoned, it regained its former dimensions. The treatment was discontinued by the patient because of the distressing pain and contractions which occurred after eight weeks' use. The profuse uterine hæmorrhage was checked, and health improved.

At the same meeting of the Society of Physicians and Surgeons at which Dr. Jackson's first five cases were reported, Dr. Etheridge reported one case entirely cured. His diagnosis was confirmed by Drs. Gunn and Miller, Dr. Etheridge's associate professors in Rush Medical College. Dr. Fisher also reported an intramural fibrous tumor cured in six weeks. I saw this case, and have no doubt of the correctness of Dr. Fisher's diagnosis.

On the same occasion Dr. Merriman, one of my colleagues, reported three cases; one, intramural, in the anterior wall, cured; one, subperitoneal, pediculated; the health of this patient was much improved, and the growth of the tumor checked; the patient was still under treatment. The tumor in the third was intramural. At the time of reporting, the size was gradually diminishing.

Dr. John Morris, of Baltimore, Md., communicates to me a case that seemed to be decidedly benefited by the ergot treatment; but, on account of the violent uterine contractions produced by the remedy, the patient would not consent to continue the treatment.

Dr. Charles E. Buckingham, of Boston, Mass., has tried hypodermic injections of ergot in the treatment of fibrous tumors of the uterus in but one case. The result was entirely negative.

Dr. George Cowan, of Danville, Ky., reports a case in the person of a colored woman, unmarried, and about forty years of age. The hypodermic injections of ergotin were used for two weeks. At the end of this time the greatest circumference of the abdomen was reduced from thirty-six inches, which it measured before the treatment was instituted, to twenty-eight and one-half inches. The patient, returning home, used the injections herself. Such frequent and painful abscesses ensued, however, that she discontinued them. During the use of the injections an obstinate constipation was removed, and her general health much improved. The abandonment of the treatment was followed by a return of the constipation, loss of flesh, great debility, and the abdomen increased in size until it measured thirty-two inches. A return to the treatment was followed by the same marked improvement in the general health, and a reduction of the size of the abdomen to twenty-seven and one-fourth inches.

Dr. H. W. Dean, of Rochester, N. Y., sends me an account of two cases treated by him. The first case was that of a patient, forty-seven years of age, the mother of three children, the age of the youngest nineteen. She suffered from pressure upon the bladder and rectum, and was the subject of severe menorrhagia. The tumor extended two inches above the umbilicus, and occupied the lower half of the right lumbar, the whole of the right inguinal, and fully half of the corresponding left abdominal regions. The os uteri was a little to the left of its natural position, and sufficiently open to admit the finger half an inch. An elastic catheter was introduced into the uterine cavity between seven and a half and seven and three-fourth inches. The diagnosis was interstitial fibrous tumor of the uterus. Intrauterine injections, through the elastic catheter, of half a drachm of Squibb's fluid extract of ergot, were made four times during each menstrual interval, from April until October, 1874. Injections into the *substance* of the cervix were made with the same frequency from October to the middle of December. The results were, reduction in the size of the tumor until the upper margin sank two inches below the umbilicus, and the uterine cavity measured only four and a half inches.

The second case was that of a woman, forty-eight years of age, the mother of three children, the youngest of whom was sixteen. She flowed irregularly, the intervals varying from one to three weeks. The flow was profuse and attended with great pain. In the intervals there was a copious flow of serous leucorrhœa. She also suffered from pressure upon the bladder and frequent micturition. The tumor occupied the right side of the abdomen, extending nearly to the umbilicus, and to midway between the linea alba and the left ilium. The vagina could not be satisfactorily explored until the hand was introduced. When this was effected the finger could be easily passed into the uterus. Between the finger thus introduced and the hand on the hypogastric region, the presence of an interstitial fibrous tumor was diagnosticated. A flexible catheter was passed into the uterine cavity to the extent of eight inches. Injection into the substance of the cervix was followed in fifteen minutes by continuous uterine contractions, which lasted twenty-four hours. This injection was repeated four times a month. When the amount was increased from fifteen to twenty minims, great gastric and cerebral disturbance, together with intense cutaneous engorgement and uterine pain, ensued. The injections were continued from November, 1873, to the middle of the year 1874. At this time the upper margin of the tumor was but one inch above the symphysis pubis, and the cavity of the uterus measured four and a half inches. Menstruation was quite normal as to time and quantity, and attended with little pain. The pelvic organs were not subject to disagreeable pressure.

Dr. W. C. Wey, of Elmira, N. Y., in a lengthy and interesting letter, gives me the results of his treatment in one case. The patient was forty-seven years old. The bulk of the tumor was equal to both closed hands. It was reduced in six weeks about one-third, and in six months to one-half of its original size. The patient, before the treatment, was very much reduced; her extremities had become œdematous, and exercise was almost impossible from the effects of hæmorrhage, which had become almost constant. These symptoms were relieved with great promptitude and in four months the menses had become normal in every respect. His treatment was continued twenty-seven months, but most of the good results, if not all, were obtained in the first six months.

Dr. Edward M. Hodder, of Toronto, writes me that the number of cases in his notebook, since May, 1873, is twenty-five; but all of these reside at a distance, and therefore he saw or heard of them only occasionally. Nearly the whole of them were treated with ergot, but not exclusively, as he combined with it the bromide and iodide of potassium. In the majority of the cases, treatment appeared to arrest further growth, and after a time caused the tumors to diminish in size. In a few cases the tumors disappeared entirely. He gives four cases in minutiæ: in one case the treatment was commenced May, 1873; the tumor nearly disappeared, and the patient is now six or seven months advanced in pregnancy. In the second case, the treatment was begun in June, 1873; the tumor was greatly diminished in size, the patient became pregnant, and was delivered late last autumn. In the third case the treatment was commenced in September, 1873; the tumor disappeared, and the patient is now pregnant. In the fourth case treatment was commenced in September, 1873, and the tumor is now nearly gone, and the patient feels quite well.

Through the kindness of Dr. Hodder I have received the report of another case by Dr. Jukes, of St. Catherines. The tumor was discovered by Dr. Jukes at the time of delivery after a normal pregnancy. The history of the case shows that its existence had been recognized by Dr. Hodder before the patient was married. Dr. Jukes gave the fluid extract of ergot continuously to this patient for three months, first in doses of one-half drachm, and afterwards increased the dose to one drachm, combined with the various preparations of iodine. From the beginning, the tumor slowly decreased in size, and at the end of three months had entirely disappeared. Some weeks after delivery, he passed the sound into the uterine cavity six inches, and the organ reached very nearly to the umbilicus. After the three months' treatment the measurement by the sound showed the organ to be very slightly above its normal size.

Dr. Strange, of Aurora, Canada, says that he had on several occasions given ergot internally to arrest the hæmorrhage attendant upon fibrous growths in the uterus, and had observed that it tended to retard their further growth.

Dr. L. F. Warner, of Boston, has used ergot in two cases of fibrous tumors of the uterus, but could perceive no beneficial effects.

Dr. J. H. Thompson, Surgeon in Chief of the Columbia Hospital for Women and Children, reports three cases treated by ergot, in all of which the tumors were reduced in size, the metrorrhagia cured, and the general health, which in all was much impaired, was entirely restored. In one of these cases Dr. Thompson injected the ergot into the substance of the tumor by passing this instrument through the cervical cavity, and thence penetrating the growth. No unpleasant effects followed this method of using the remedy.

Dr. Russel, of Oshkosh, Wisconsin, reports one case in which the tumor of large size was very much reduced, and all the disagreeable symptoms were removed.

During the year since the last meeting of the Association I have treated seven cases.

One was not affected by the ergot, and the patient died six weeks after the commencement of the treatment. She was anæmic to a degree which I have seldom before seen. The remedy was administered hypodermically every day, thirty drops of Squibb's solution of the solid extract being injected each time.

The second patient was the subject of a uninuclear tumor, situated in the anterior wall of the uterus, about the size of the fetal head. She had profuse hæmorrhages at her menstrual periods, and copious leucorrhœal discharges between them, and had become very anæmic. The discharge ceased and the tumor disappeared in five months from the time she first came under my care. The remedy was at first used hypodermically; but, on account of the pain and inflammation at the punctures, I was obliged to cease this mode of administering it, and gave it internally. Teaspoonful doses of Squibb's fluid extract were given twice a day for the last three months of the time the patient was under treatment.

In three other cases, in which the medicine was given internally, the tumors were very much reduced in size, but did not disappear. The hæmorrhages and leucorrhœa were cured, and the patients restored to health.

In another, the hæmorrhages and leucorrhœa were rendered much less profuse, but the tumor was not reduced in size.

In a colored senile patient, over sixty years of age, with a large multiple tumor, no effect was produced by the ergot.

In four of my cases I was obliged to suspend the treatment several times for a few days, to give the patients a respite from the almost constant pain.

Five of these complained of great heat and tenderness of the uterus after they had been under treatment about four weeks.

In all, the pulse was accelerated and remained small and weak.

As one of my cases presented some features of more than ordinary interest, I will give it more in detail: The patient had been married twelve years, was thirty-seven years old, and sterile. She had been aware of the existence of the tumor for three years, but could not give a very clear history of its progressive enlargement. The uterus extended three inches above the pubes, and was a little to the right of the median line, very hard, and irregular in shape; but I could not discover that there were subperitoneal nodules. Per vaginam, the tumor could be felt to occupy the right side and anterior wall of the uterus, and fill up two-thirds of the pelvic cavity. The cavity of the uterus measured four and a quarter inches. A polypus, pyriform in shape, quite firm in consistence, about the size of a pigeon's egg, depended from the mouth of the uterus, and appeared to be attached to the upper part of the posterior wall of the cervix. The diagnosis was intramural fibrous tumor of the uterus, with two nuclei of development, and a fibrous polypus. The patient was somewhat anæmic from the long continuance of profuse leucorrhœa and metrorrhagia. Without removing the polypus, I commenced treatment by giving the patient three grains of the solid extract of ergot three times a day. The next menstrual flow was not so profuse, and the leucorrhœa diminished almost from the beginning. At the end of four months the menstruation was normal, the leucorrhœa had ceased, the tumor was reduced to half its former dimensions, and the patient's health restored. A continuation of the treatment two months longer causing no further reduction of the tumor, it was suspended. During the treatment, I watched with much interest the effects produced upon the polypus, examining it once in every ten or twelve days. It showed decided decrease in size at the end of the first ten days, and progressively decreased until, at the expiration of four months, it was not more than one-third the size it presented when first examined. It was twisted off at this time with great ease, and its removal was followed by almost no loss of blood.

The most remarkable case of which I have any knowledge was reported to me by Dr. G. C. Goodrich, of Minneapolis, in which absorption of a large tumor took place under the administration of ergot and belladonna. I subjoin his description:

"The treatment was commenced in 1870, and continued two years. The uterus filled the whole space between the ilia, and measured in the transverse diameter twelve inches, and in the vertical nineteen inches, extended up under the ensiform cartilage and close up to the margin of the cartilages of the ribs. The treatment was followed by cramps in the uterus, which produced a wild enthusiasm in the mind of the patient, and inspired her with strong hopes of recovery. Without consulting me, she doubled the dose of medicine, which was administered internally, and as a consequence she was attacked with very strong uterine contractions and symptoms of metritis. This caused me to abandon treatment for about one month, and had it not been for the urgent determination of the patient, I would not have resumed it. She insisted that as this was the first medicine which had ever affected the enlarged organ, she believed it would cure her, and promised to obey my directions if I would proceed. She so promptly and rapidly improved that I doubted if it were not a coincidence with, rather than a consequence of, the treatment. Prompted by this doubt, I abandoned the use of the ergot and belladonna and continued alterative treatment. The patient soon assured me that she no longer felt the griping pains caused by the remedy, and that the tumor was softer and larger than when she took the ergot prescription. The ergot and belladonna were again resumed, and in four months she was able to make a trip to Boston alone. While absent, she continued to take the medicine. From this time she continued rapidly convalescing, and is now in the enjoyment of fine health."*

I subjoin cases in which the tumors were expelled piecemeal under the administration of ergot which came under my own observation:

The first case in which this process was attained occurred in the practice of Dr. H. P. Merriman. So far as I am aware it is the first case on record. With several other medical gentlemen I had the opportunity of seeing the patient several times, fully verifying the diagnosis, and witnessing the results of the treatment.

It was recorded in my address before the American Medical Association already referred to. Dr. Merriman says:

"Mrs. K., aged thirty, the mother of three children, came to me in September, 1874, in regard to a tumor in the abdomen. Examination revealed a large tumor about the size of a four and a half months' pregnancy; it was found to be interstitial, and situated on the right side and a little anterior; the sound passed six and three-fourths inches. She was at once given twenty drops of fluid extract of ergot (Squibb's) three times a day. She came a month later saying she was much better in health, but the tumor remained the same. I told her to continue the medicine, but to increase the dose to twenty-five drops and after a time to thirty. I have seen her three or four times during the past winter, and twice had to suspend treatment and give opium on account of severe pain and tenderness in the uterine region. Finally, March 23d, 1875, I stopped all use of ergot, as the patient was very weak, the pulse 110, the appetite poor, and a very offensive and abundant discharge was coming from the uterus. The os uteri was very patulous. On April 5th, I was summoned in great haste. Something had just come away from the patient. I found it to be an offensive fleshy mass, evidently a disintegrated fibrous tumor. Examination showed no tumor in the abdomen, but per vaginam the os patulous, soft, and very sensitive, and the uterus still large. A week later the uterus had regained its normal condition."

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* The author's address before the American Medical Association at its meeting in 1875.

As an evidence of the complete restoration of the health of the patient, Dr. Merriman informs me that she has since had a fine healthy child.

The next case, which has never been published, occurred in my own practice, and I will give a brief account of it: Mrs. W., forty years of age, had been married eighteen years, and had not borne children or been pregnant. She had enjoyed good health and noticed nothing unusual in her menses until about three years before she consulted me on July 17th, 1875. Three years ago she began to have an increased menstrual flow, the intervals were shorter, and she became the subject of an acrid leucorrhœal discharge. For the last seven or eight months the flow has been almost constant, but moderate. The catamenial periods had been during the time well marked by a profuse discharge every four weeks. She was quite feeble from the great loss of blood she had sustained, very nervous and dispirited. For more than a year she had been conscious of the presence of a tumor in the hypogastric region. She had at no time observed that the discharge was fetid, or indeed had any smell. By palpation, a tumor could be found extending to within about two inches of the umbilicus, and filling up the same space in the lower part of the abdomen which the uterus occupies at five months' pregnancy. It was globular, very hard, somewhat nodulated in shape, and movable. The cervix, when examined per vaginam, was ascertained to be long and pointed, and the mouth small, and not at all patulous. The probe entered the uterine cavity, passing upward and backward fully four inches, and moved with the impressions made upon the tumor above the symphysis.

From the history and examination it was not difficult to diagnose a fibrous tumor in the anterior wall of the uterus.

I prescribed thirty drops of the fluid extract of ergot three times a day, to be taken in a wineglassful of water, and large injections of cold water twice a day.

On July 19th the patient called to see me again. She informed me that the medicine had caused great pain in the tumor, resembling cramps, with a strong desire to bear down, as though something was coming out of her. An examination revealed no change in the size of the tumor, but increased hardness and irregularity of its surface. She was directed to continue the medicine. On the 25th the patient complained that the pains were almost unendurable on account of their severity and continuousness. She said they prevented her from sleeping, or resting in any position. For the two days previous to her call on the 25th she had noticed in the discharges—which were less bloody—stringy and lumpy substances. This was different from anything she had seen before. Still there was no fetor. The tumor seemed to be somewhat less in size than upon the first examination. There were some changes in the cervix; it was soft, and the mouth was patulous; the finger entered it a short distance, but would not pass the inner os uteri. The cervix was still as long as before the commencement of the pains, and I thought the lower portion of the tumor seemed more elastic than at first.

On the 27th the pain was so severe and persistent that I thought it advisable to diminish the doses of ergot, and directed her to take only fifteen drops three times a day. The discharge was increasing in quantity, and she gave me several pieces, one of which was as large as a cherry. It was so firm that it was difficult to break it up with the fingers, and of grayish color. There was no odor that I could discover in the piece examined.

Dr. W. H. Warn was kind enough to examine this specimen with the microscope. He found it composed mostly of hypertrophied connective tissue fibres, with bloodvessels running parallel to them. The tumor had decidedly decreased in size.

On July 31st the pains, with less severity, were still continuous for the greater part of the day and night. There was a constant discharge of these small fibrous lumps. Judging from a close examination, the tumor was not half so large as when first seen.

The discharge continued without diminution until the 15th of August, when it became less, and the pain also decreased. At this time the upper part of the tumor could barely be felt above the symphysis. The cervix was still long, but the mouth was less patulous, and the probe would not pass more than two and a half inches.

Since the commencement of treatment the bloody discharge has not indicated a menstrual flow. In fact, the bloody discharge became progressively less, until it had entirely ceased about the middle of August.

The patient's health greatly improved, and she was permitted to return to her home in the country. She wrote me on the 1st of September that she still suffered pain, and the discharge still continued, but that it now had the appearance of pus, and was somewhat fetid for the first time. In October she wrote me again to say that there was no sign of the tumor; she had no pain, and never enjoyed better health. She had menstruated twice since she had returned home, but the discharge at both periods was moderate, and she had no pain. She continued the ergot up to the middle of September.

Mrs. Arthur King, of Sterling, Illinois, called on me December 13th, 1875. She was thirty-five years old, married, and had never been pregnant.

On the 1st of the preceding June she noticed a circumscribed hard lump two inches below and to the left of the umbilicus. She was the subject of serious uterine and sympathetic symptoms, for which she had at different times had treatment. She had profuse menorrhagia, leucorrhœa, and great sense of weight in the pelvis.

Upon examination I found a hard, round, movable tumor, extending up to within two inches of the umbilicus, filling up the whole of the right iliac, the hypogastric, lower half of the umbilical, and more than half of the left iliac regions.

The contour of the tumor was somewhat uneven, though not distinctly nodular. The cervix was long, pointed, and thrown backward and to the left. The sound entered the small uterine mouth and passed upward, backward, and to the left five and a half inches.

The diagnosis was a fibrous tumor of the right anterior wall of the uterus. I prescribed thirty drops of Squibb's fluid extract of ergot to be taken three times a day. She went home, but did not commence taking the medicine until the 20th of December. On the 26th of December Dr. J. B. Crandall was called to see her, and describes her condition as follows:

> "The patient was in a state of great nervous prostration, and worn out by severe pain and loss of sleep. The pains commenced soon after taking the second dose of ergot, and were excruciatingly severe for about three hours, after which they continued less severely for two days and nights. She had more or less hæmorrhage from the uterus after taking the ergot. Her pulse was feeble, 110 to 120 to the minute. The skin was hot and dry, and she complained of great pain and tenderness over the uterus and lower bowels. The feet were drawn up, and the face wore a pinched and peculiar expression."

Under these circumstances the doctor administered anodynes, tonics, and nourishment, to the great relief of the patient.

On January 11th, 1876, the patient began to pass from the vagina small masses of fibrous substance, from the size of a chestnut to that of an English walnut. The substances thus discharged were firm and gray in color, and were exceedingly fetid. This discharge continued up to the 21st of January, when the uterus was very much diminished in size, the tenderness had subsided, and the patient appeared comparatively comfortable. Up to that time she had taken but three doses of ergot, on the 20th of the preceding month, and the doctor ordered it to be resumed again. This time the ergot produced no pain, and after three or four days was discontinued. From the 21st of January there were no more pieces discharged, but up to February 1st a yellowish, thin, offensive fluid passed from the vagina in considerable quantities. On the first day of February the ergot was again ordered and continued two weeks, when, as no results ensued, it was finally dropped.

Dr. Crandall states that on the 14th of February the uterus was reduced to its normal size, and on the 26th the patient was up and about her work, completely cured. He remarked, in this connection, that the first three doses of ergot taken by the patient was the cause of her recovery.

This case is published in the August (1875) number of the *Chicago Medical Journal and Examiner*, as reported by Dr. Crandall.

Mrs. L. D. M., aged forty-seven years, had a fibroid tumor in the anterior wall of the uterus, which, with the enlarged uterus, arose to within two inches of the umbilicus.

She commenced taking thirty drops of the fluid extract of ergot on the 22d of September, 1876, and was to increase gradually the dose with the object in view of causing the disruption and expulsion of the tumor. The ergot at first produced no perceptible effect until she had taken it ten days, when she began to experience the pain of contraction. The pain became so severe and continuous that it was necessary to omit it for two or three days at a time. The patient was intelligent and understood the object and mode of action of the ergot, and when the pain entirely subsided, she courageously resumed it in the smaller doses, and increased again until the pains became intolerable. On the 13th of January, 1877, small pieces of the tumor showed themselves in the vaginal discharges, and by the 26th of the same month the whole of it had been discharged piecemeal.

She wrote me on the 30th of January, saying:

"I think I wrote one week ago to-day. At that time the tumor was passing. It continued to pass until the 26th, when, I think, the last was expelled. To-day I send you by express a portion of the last that came. I think the whole of it, including the portion I sent you, would have weighed one and a half pounds. I do not believe a quart can would hold it if the whole had been preserved. It commenced to come on Saturday, and from Saturday evening to Sunday morning there was a pint or more. After that, the stench was so disagreeable that we could not cleanse it, consequently we threw it away. Wednesday and Thursday it seemed to be in one continuous mass. I cannot better describe it than to say that it came like sausage-meat from a stuffer. I would cut off about four inches a day, that is on Wednesday and Thursday. On Friday morning the last of it came away."

During, and for some days after, the expulsion she suffered slight symptoms of septicæmia, but recovered from them, and in the course of a month afterward she visited me, when I found the uterus measured two inches and a half in depth. She then had some leucorrhœa, but was fast regaining her health. She is now perfectly well, and has passed in safety the menopause.*

The following case is reported to me by letter by William Fox, M.D., of Milwaukee, January 19th, 1880:

"Mrs. B., aged forty-three; last child four years old; did not get up well. Menstruation returned earlier than usual, and gradually became more frequent and profuse, and of longer duration. Finally the abdomen began to enlarge so much that her friends believed her pregnant. But her health began to fail; her losses became greater, and almost continuous. She was without treatment, as she believed her condition due to her time of life. An examination revealed a uterus as large as at the sixth month of gestation, and could be easily felt and moved through the abdominal walls. A sound entered five and a half inches, and with it in the uterus and the hand outside, a tumor could be felt in the anterior wall. The patient was put upon 30-drop doses of Squibb's extract of ergot, four times daily, and sent to consult Dr. Byford February 3d, who confirmed the diagnosis and approved the treatment, and made a prognosis more favorable than I believed. He said, with the above treatment we would starve the growth, and possibly expel it. The period was detained a week, when it came on, February 21st, five weeks from the commencement of treatment, with a great deal of pain. The ergot was continued, the pain increasing, until, on the third day, I found the patient with a temperature of 105°; pulse, 140, an offensive discharge, and complaining of a feeling as of some foreign body in the vagina. The vagina was full of a stinking mass, not unlike a placenta in feel, but harder. The os was quite open, and the fingers could readily pass into the uterus and describe the growth. All the gangrenous mass was taken away as fast as possible with the fingers and forceps, and the uterus carefully washed out with carbolized hot water every four hours. The ergot was discontinued because of the pain. Whiskey, quinine, and milk constituted the treatment. She rapidly improved, and in less than a month was out driving, walking, and feeling well. In six weeks, menstruation returned; came on without warning; lasted less than three days; the first natural period she remembers having had in four years. She has had three since, perfectly natural in every way. She is perfectly well."

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* This case, the abstract of which I have here given, was in the May 15th, 1877, number of the Archives of Clinical Surgery, N. Y.

I have known ten cases in which the tumors were expelled piecemeal by ergot, with but one death. The death occurred in a patient who rode one hundred and fifty miles on a railroad train to see me, with pieces of the tumor hanging from the vagina, which she would not allow her physician to remove. When she arrived, I passed my fingers up into the contracted capsule and scooped out the remaining portion of the tumor. She was so exhausted, however, by the journey and the sepsis, that she died three days afterwards.

I cannot help believing that if she had remained at home and submitted to the treatment of her physician, her life need not have been sacrificed.

Summary of Cases cured by Absorption.

The total number of cases here cited is one hundred and one. Twenty-two of them are reported cured. In thirty-nine more the tumors were diminished in size, and the hæmorrhage and other disagreeable symptoms removed. Nineteen of the remainder were benefited by the relief of the hæmorrhages and leucorrhœal discharges, while the size and other conditions of the tumors were unchanged. Out of the whole number only twenty-one cases entirely resisted the treatment. This shows results decidedly favorable in eighty of the one hundred and one cases.

We may still further appreciate the favorable effects of the treatment by the consideration that in twenty-one cases it was suspended, which is as great a number as resisted treatment.

It is also a noticeable fact that some of the cases in which the treatment was suspended were very much benefited by it.

I have no doubt that many more cases of fibrous tumors of the uterus treated by ergot might have been collected, had time permitted, as I have heard of cases the history of which I could not obtain.

In collating my cases, I have in no way selected or arranged them to influence inferences as to results, but I have faithfully recorded all I have received from correspondents, or found in journals, which were given sufficiently in detail to enable me to arrive at a correct idea of the treatment and its effect.

	No. of Cases.	Cured.	Diminution in size of tumor and cure of hæmorrhage.	Hæmorrhage relieved but tumor not affected.	No result.
Hildebrandt, ...	27	3	11	9	4
Bengelsdorf, ...	4	. . .	. . .	2	2
Chrobak, ...	9	1	2	3	3
Atthill, ...	3	. . .	. . .	2	1
White, ...	14	4	5	. . .	5
Goodrich, ...	1	1			
Howard, ...	2	2			
Jackson, ...	8	2	3	2	1
Etheridge, ...	1	1			
Merriman, ...	4	2	2		
Fisher, ...	1	1			
Morris, ...	1	. . .	1		
Buckingham, ...	1	. . .	. . .	. . .	1
Cowan, ...	1	. . .	1		
Dean, ...	2	. . .	2		
Wey, ...	1	. . .	1		
Hodder, ...	4	1	3		
Jukes, ...	1	1			
Warner, ...	2	. . .	. . .	. . .	2
Byford, ...	9	3	3	1	2
Allen, ...	1	. . .	1		
Thomson, ...	3	. . .	3		
Russell, ...	1	. . .	1		
Total, ...	101	22	39	19	21

Modes of using Ergot.

Not much uniformity has been observed by the writers above quoted in the manner of using ergot.

Drs. Hildebrandt, Bengelsdorf, Chrobak, Atthill, and Jackson recommend, and use it hypodermically.

Drs. White, Jenks, and Howard administer it hypodermically, internally by the stomach, and in the form of suppositories in the vagina and rectum.

Some of the arguments in favor of the hypodermic injections are: 1st. It acts more rapidly and with more certainty. 2d. It does not produce the gastric disturbances sometimes caused by ergot when taken internally. 3d. It can be administered in this way when it is entirely impracticable to give it internally on account of the great exhaustion or gastric irritability of a patient.

The main objections to the hypodermic method seem to be: 1st, the pain inflicted by the needle; and, 2d, the inflammation and suppuration which ensue.

Dr. Hildebrandt has met with but one case where the pain of the puncture was an objection to its hypodermic use. With regard to abscesses he says: "I am sure I do not exaggerate when I say that up to the present time I have myself made one thousand hypodermic injections of ergotine for various purposes, or have seen them made and observed their results in the clinical wards in charge of my assistants." And he then adds: "I have never seen an abscess follow the injections made by me personally, and only in three clinical cases did this occur. The chief reason why no abscesses formed among the large number of other injections is that I always injected the fluid very deep into the subcutaneous cellular tissue—perhaps even into the abdominal muscles."

Dr. Atthill met with this difficulty in all three of his cases, although he also injects the fluid deep into the tissues.

Dr. Chrobak was obliged to desist from treatment on this account, in four out of his nine cases.

Dr. Cowan was interrupted in his case by the formation of abscesses.

Thus it will be seen that much difficulty is experienced by many in carrying out the treatment.

Dr. Hildebrandt's reason does not seem to be the only one why practitioners are so troubled with this objection, since Dr. Atthill and others have also injected deeply. As far as I can judge, very few have been able, even by the most careful efforts, to achieve the same happy results in this respect as Dr. Hildebrandt.

Dr. Hildebrandt, and also Dr. Atthill, select the lower part of the abdomen as the part in which to make the injections.

Dr. Keating, of Philadelphia, injects just posterior to the great trochanter.

Dr. Jackson selects the deltoid region, and thinks it makes but little difference where the insertion is made.

Dr. White, of Buffalo, injects over the abdomen, into the cervix uteri, and into the substance of the tumor if it is accessible, and has met with no bad results.

Dr. Wey used over two hundred injections in the abdominal region above the pubes in one case, and abscesses occurred in the seat of the puncture as often as once in eight operations.

Dr. Dean commenced using ergot in the form of Squibb's fluid extract by injecting it into the cavity of the uterus through a flexible catheter, but now he employs the solution of Squibb's solid extract dissolved in water—one grain to five minims. Of this he injects from ten to fifteen drops into the substance of the cervix about four times a month or once a week. He thinks the effects are more prompt and energetic than when administered hypodermically. His instrument consists of a barrel the same size as the common hypodermic syringe and a tube six inches long. He has known inflammation and suppuration to follow but once in his whole experience.

Different Preparations.

Believing the preparation of the medicine employed had much to do in causing the irritation thus observed, efforts have been made to find some form that would not produce the painful results thus described.

Hildebrandt is now in the habit of using Dr. Wernich's formula for the watery extract of ergot, and Dr. Mundé thinks it is very similar to the preparation made by Dr. Squibb. Dr. Hildebrandt added pure glycerin in the proportion of about one part to four of the solution, and the amount of the injection was forty minims. This contained a little over two grains of the extract, probably representing ten to twelve grains of the crude ergot.

Most American practitioners now use Dr. Squibb's preparation above referred to, some of them by dissolving it in pure water, while others add to the water a small amount of pure glycerin. Dr. Squibb recommends a solution of this extract as follows: Dissolve two hundred grains of the extract in two hundred and fifty minims of water by stirring; filter the solution through paper, and make up to three hundred minims by washing the residue on the filter with a little water. Each minim of this solution represents six grains of ergot in powder. Of this solution from ten to twenty minims are injected once daily, or once in two days. This is the only preparation I have used in hypodermic injections, and I believe it the best we can at present procure.

Dr. Wey properly lays great stress on the necessity of having the solution fresh, believing that in a very short time it deteriorates, and becomes more irritating to the tissues. He says: "Ergot thus administered generally produces prompt effects." In most instances, in half an hour the patient experiences painful contractions of the uterus. The hand applied over the organ at once recognizes the increased hardness in the mass. These contractions increase in severity for the first two hours, and then continue with vigor for from six to ten hours, gradually becoming less until they cease entirely. Some patients suffer so much from these pains as to refuse to proceed in the treatment, while others bear them without much inconvenience. We do not always observe these painful effects even when the drug operates very beneficially. Sometimes the hæmorrhages are controlled, as it were, insensibly, and the tumor slowly dscreases in size without the patient experiencing any considerable discomfort. It seems highly probable, from the statements made by my correspondents, and especially Dr. Wey, as well as my own observations, that the benefits of the remedy are produced with more rapidity in the early part of the treatment.

The preparation used internally more frequently than any other is the fluid extract, either alone or in combination with belladonna. Each minim of Squibb's fluid extract is equal to one grain of ergot. Some recommend that it be given in doses of thirty drops three or four times a day. Others believe that it should be given in larger doses less frequently repeated, as, for example, one drachm once or twice in twenty-four hours. It is efficacious given in either way, but probably more so in the larger and less frequent doses. This preparation is so offensive, and causes so much nausea in exceptional instances, that it cannot be borne.

Dr. Squibb claims that his solid extract does not offend the stomach so frequently as the fluid extract. This extract may be used in pills coated with gelatin. A pill of five grains is equal to twenty grains of the crude ergot, and may be administered twice or three times daily. From observation of the effects of the different preparations, I am satisfied that this is altogether the most efficient and agreeable for internal administration.

A suppository for the rectum, which, in Dr. White's practice, acted satisfactorily, may be composed of fifteen grains of the solid extract, and enough gelatin to give it size and form. I have no doubt of the great usefulness of this method of administering ergot.

I think it is also quite certain that the addition of belladonna in some cases increases the curative effects of ergot; how much, I am not quite sure. Dr. Goodrich, who reached such splendid results, gave the fluid extract of ergot and belladonna together throughout the entire treatment of his case.

From what has been said it may be inferred that hypodermic injection, if the most efficacious, is also the most objectionable method of using the ergot, and that in many cases the exhibition of it in this way is rendered entirely impracticable, because intolerable, to the patients.

May we not hope for great improvement still in the pharmacy of ergot? Ergot produces many good effects besides reducing the size of the tumors and relief of hæmorrhage. I have seen, and some of my correspondents mention, great functional improvement in the more important organs. Some patients are relieved by it of obstinate constipation; the appetite is improved, and the general health restored. This remarkable salutary effect is obviously due to its action on the ganglionic nervous system. In exceptional instances ergot has very disagreeable effects. Dr. Goodrich mentions inflammation of the uterus as one, and my patients often complain of great heat and tenderness in the uterine region. Hildebrandt speaks of one case in which, after the sixth injection, the patient complained of vertigo, imperfect control of her lower extremities, and slight spasms of the flexor muscles of the forearm. Dr. Wey observed severe general nervous perturbation to follow its use in one instance. And Dr. Morris's patient discontinued treatment because of the terrible and tumultuous effects upon the uterus.

Dr. E. P. Allen, of Athens, Pennsylvania, sends me the report of a very interesting case of fibrous tumor treated by hypodermic injections of ergot, in which phlebitis supervened. A condition of one limb was produced precisely similar to phlegmasia alba dolens, and ran its protracted course to a favorable termination. Prior to the accident the tumor had very much decreased in size; but, after the treatment was suspended, and during the course of the phlegmasia, it rapidly increased again, and the hæmorrhages which had been controlled returned. After trying other methods of treatment without any good results, he and his patient in despair were driven to the use of ergot again. It was tried internally with some good effects, but as the remedy thus administered disagreed with the stomach, it was again injected hypodermically with rapid improvement. The injections were used on the side of the abdomen, opposite to that formerly affected with phlebitis. After a number of injections, signs of inflammation of the veins were again observed, and the sound leg passed through all the stages of phlegmasia that had been observed in the first. From the intelligent observation of Dr. Wey and others, we may fairly conclude that it is not improper to continue the use of ergot during the menstrual flow. I can also add my testimony as to the entire harmlessness when given during that periodical flow.

Auxiliary Treatment.

With the exception of Drs. Goodrich and Howard, all the writers and correspondents quoted have depended exclusively on ergot for the removal of fibrous tumors of the uterus; in fact, the treatment has been experimental, and had for its object the solution of the question suggested by the publication of Hildebrandt's articles on the use of ergot, viz., will ergot cure fibrous tumors of the uterus? The course pursued was well calculated to, and I think did, test Hildebrandt's treatment pretty thoroughly, but it is doubtful whether this exclusiveness is the best practice. The well-known alterative and sorbefacient medicines have, in rare instances, been credited with the cure of these tumors without the aid of ergot, and it is not difficult to understand that absorption may be promoted with more certainty by the alkaline bromides and iodides, where the vitality of the tumor is first impaired by the action of ergot on its vessels and the muscular fibres surrounding it. Dr. Goodrich seems to have held this view of the alterative treatment, as he prescribed iodide of potassium and bichloride of mercury with ergot. Dr. Howard also employed alteratives in the same way. Both of these gentlemen combined belladonna with ergot. The efficiency of this combination, as represented by their reports, justifies us in believing that the alteratives employed by them were auxiliary in a high degree. How much may be effected by judicious alterative and other auxiliary treatment will, doubtless, be determined by future observation.

Corrective Treatment.

By this I mean treatment that will prevent or ameliorate the disagreeable effects of ergot in certain exceptional instances. The distressing pain caused by it may sometimes be made more tolerable by the administration of hydrate of chloral, without very materially influencing its other effects. Indigestion, constipation, hydræmia, and nervous debility may be corrected by tonics, alteratives, laxatives, and stimulants given simultaneously with ergot. In short, the general condition of the patient should be cared for in the same rational manner as if ergot was not being administered.

Modus Operandi.

The influence of ergot over the uterus has been a familiar fact to the profession for a long time. It is not long, however, since we were aware of its effects upon the muscular fibres entering into the formation of other organs. We now know that this medicine acts upon the unstriped muscular fibre wherever found, whether in the viscera or in the vessels of the body.

The fibres of the uterine walls, and the arteries supplying them with blood, both belong to this class; this fact in the formation of the uterus renders it particularly susceptible to the action of ergot. The drug acts upon the uterus in a threefold manner, and causes a diminished flow of blood to the morbid as well as healthy tissues in the uterine structure.

1st. The calibre of the arterial tubes is diminished by the contraction of the muscular fibres which enter into their composition. 2d. The arterioles are diminished in size by compression from the contraction of the uterine muscular fibres which surround them. 3d. These vessels are distorted and drawn in diverse directions by both the contraction and compression, and hence are rendered less fit for sanguineous conduits.

Another consideration of prime importance is that, under the influence of these medicines, the nutrition of fibrous tumors is interfered with, not only from diminution of blood in their tissues, but also from compression of their substance by the proper fibres of the uterus, their trophic energies are arrested, and are therefore made more susceptible to the process of disintegration and absorption.

The great influence exerted by ergot over the circulation of the uterus is rendered more efficacious in the removal of fibroid tumors of that organ, because of the peculiar organization of the growths. It is now pretty well understood that this neoplasm is not very generously supplied with arterial blood, and that its supply is derived from numerous minute vessels instead of one or two of larger calibre. From these circumstances it results that its vitality is very low, its circulation easily disturbed, and consequently its nutrition impaired.

I think we are justified from observation in assuming that the action of ergot may be graded from an almost imperceptible to a very intense degree. Probably the first degree affects the vascular supply; the second, in addition to this, causes so much contraction as to merely render the fibres tense without causing pain; and the third prompts the uterine fibres to vigorous and painful contraction.

This inference is plainly deducible, I think, from the several modes by which tumors are made to disappear under its action, as well as from direct observation of the uterine fibres.

I will now venture to call attention especially to the manner of expulsion of the polypoid and submucous intramural varieties. It will be seen from Fig. 147 that when the uterus contracts, all the fibres unite in pressing the polypus through the cervical canal, which is usually already shortened, and rendered dilatable in consequence of its increased vascularity.

The cervical canal dilates, and after more or less painful efforts the polypus is expelled entire, covered by the mucous membrane. This membrane is often in a state of gangrene, but so far as I have observed these cases, the tumor is not broken to pieces.

Fig. 148 represents an intramural fibroid between the central line of the uterine wall and the mucous membrane. It is intended to show a tumor where a thin layer of fibres separate it from the mucous membrane, and how a thick and heavy layer is spread over its external hemisphere. Three-quarters of the thickness of the muscular wall are applied to that side of the tumor. If in this position all the fibres of the uterus vigorously contract, the fibres near the mucous membrane must be overcome by the heavy layer outside (at C). But the opposite wall of the uterus plays an important part by supporting the weaker layer at the fundus of the tumor, and adding its own force in overcoming the capsule (at E), where it usually gives way. The position of the tumor makes its escape from the concentric action of all the fibres of the uterus impossible, and every one knows that when the resistance is partially overcome, the uterus is stimulated to more vigorous action, and the pains will not abate until the mass is expelled. If not too large, it is driven out without undergoing great laceration, but if its size and attachments are such as to make this impracticable, it will be broken into fragments and expelled piecemeal.

FIG. 147.

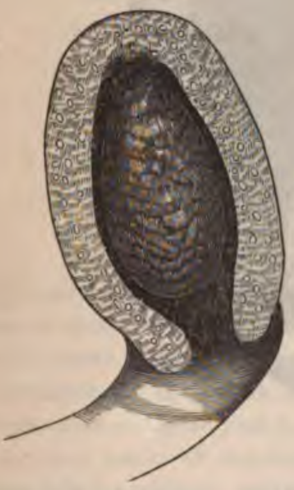
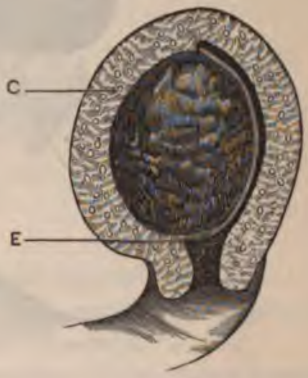


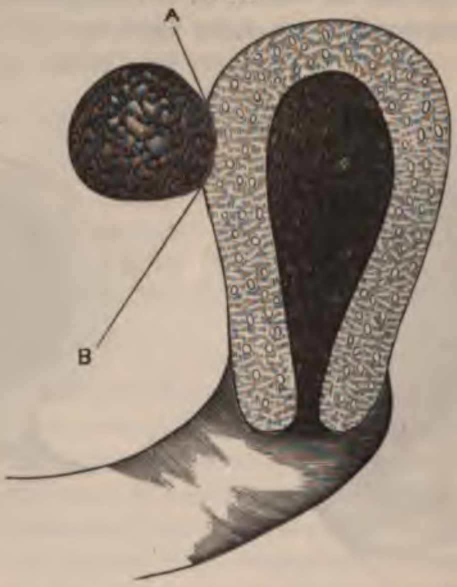
FIG. 148.



Allow me to supplement the above description by explaining the effect of ergot on the sub-peritoneal and central intramural tumor.

In Fig. 149, we see the disposition of the fibres on the sub-peritoneal variety; next the uterine cavity there is a thick and strong stratum of fibres, while immediately under the peritoneum the layer is very thin and comparatively weak. When the uterus is acting with vigor, the fibres between A and B will cause those two points to approximate each other, and the tumor will become pediculated; but that is all, for the tumor lays outside the field of concentric action and escapes the crushing influence to which the submucous variety is subjected.

FIG. 149.



The amount of force exerted upon it is that exercised by the weaker layer of fibres in a state of conquered antagonism, and the rupture of the capsule is impossible.

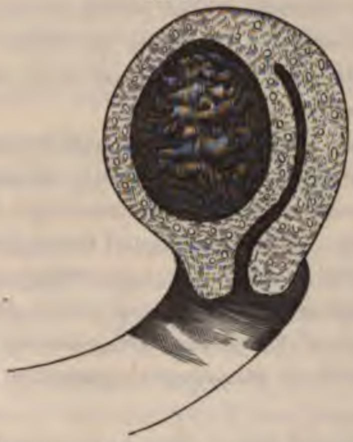
If we take Fig. 150 as a correct representation of the fibrous tumor when situated in the central stratum of fibres, in which the antagonism is equal at all points, it will be evident that there is no tendency to rupture of the capsule, and much less crushing influence exerted upon it than if it were situated slightly nearer the mucous membrane.

This variety of the tumor, therefore, yields to the influence of ergot, only as it may be "starved out" by diminution of its blood supply, and as the effect of pressure, which we all know are the two conditions most favorable to absorption.

Now I think we have arrived at a point in this investigation where we can draw inferences as to the forms of tumors likely to be effected by ergot in different ways, as well as those that will not be effected by it.

We do not expect ergot to cause painful and efficient contractions in the healthy unimpregnated uterus; its fibres are not capable of such contraction, and it is not until the fibres have become greatly developed that they are susceptible to the impressions of ergot. In cases of early abortion, its action is very unreliable, but after the fourth month of pregnancy it acts quite efficiently.

FIG. 150.



In tumors of the uterus, the development of the fibrous structure is sometimes so slight that it is incapable of contraction; there may be so many nuclei of degeneration that there are not enough sound fibres left for efficient contraction. Then, where there are many small tumors developed in the uterine walls, the circulation is cut off to such a degree that they degenerate into a cartilaginoid substance, and sometimes they are infiltrated with calcareous material. In none of these cases will ergot cause any appreciable results. When, however, there are but one, two, or three nuclei of morbid growths, as they increase in size the fibres undergo the development necessary to enable them to contract with great efficiency, and render them susceptible to the influence of ergot.

Another condition which influences the hypertrophic growth of the fibres is the situation of the tumor.

Subperitoneal tumors do not cause as great growth in the fibres of their neighborhood as the intramural or submucous varieties. A single intramural tumor causes great development of the whole uterine tissues, but the development of the wall in which it is situated decidedly predominates. The submucous neoplasm so soon gains the uterine cavity that the development is nearly the same in the whole organ.

When, therefore, we administer ergot for the cure of fibrous tumors of the uterus, the beneficial action of the drug will depend upon the degree of development of the fibres of the uterus, and the position of the tumor with reference to the serous or mucous surface. The nearer the mucous surface, the better the effects. If the tumor is very near the lining membrane, we may hope for its expulsion *en masse*, or by disintegration.

We can often select the cases in which good results may be expected. There are four conditions which are usually reliable for this purpose. They are: smoothness of contour, hæmorrhage, lengthened uterine cavity, and elasticity. A smooth, round tumor denotes, for the most part, uniform textural development, hæmorrhage, a certain proximity to the mucous membrane, a lengthened cavity, great increase in the length and strength of the fibres; and elasticity assures us of the fact that cartilaginoid or calcareous degeneration has not begun in the tumor.

An uneven, nodulated tumor may be composed of many separate solid masses. These displace and prevent the growth of the fibres to such an extent as to render contractions inefficient. When hæmorrhage is not present, the tumor is probably near the serous surface, and consequently not surrounded by fibres. A short cavity denotes short, undeveloped fibres, while hardness is indicative of unimpressible induration.

Although I have no experience in the use of ergot in such cases, I should expect large fibro-cystic tumors to resist its action.

From this view of the subject, it will be seen that I freely admit that there is a large number of cases in which ergot cannot produce any good results in consequence of their nature; but there is another reason of equal moment why ergot may fail to act upon such cases as would seem to be favorable, by the worthlessness of the drug and its preparations.

Dr. Squibb, of New York, a high authority, says in reference to this subject:

"The molecular constitution of the active portion of the drug seems, however, in its natural condition to be loose, and, like a slow fermentation, to be undergoing slow molecular changes, so that by age its peculiar activity is slowly diminished until finally lost."

And again:

> "The ergot in the grain, however well kept, is known to become inactive without any known change in appearance, though the sensible properties, such as odor and taste, may and probably do not change. Ergot, in powder, is known to diminish in activity much more rapidly than when in grain, and probably soon becomes inert. The tincture and wine of ergot are believed to change, though more slowly than the ergot in substance; while the extracts, and so-called ergotins, are all supposed to change more rapidly."

These facts, so explicitly stated by Dr. Squibb, are very suggestive as to the causes of the frequent failures of ergot, and need no comment.

When all these causes of failure are considered, the variety of experience met with in the reports upon its trial in the treatment of these tumors is not surprising. It should not, however, be discouraging, but should prompt us to more care in selecting the cases and securing reliable preparations of ergot. I have implicit faith in the action of ergot when all the conditions I have pointed out are present. I do not believe it to be uncertain in its action.

In addition to the above conditions, I believe perseverance an indispensable condition to success, as it often requires several months to get the best results.

In concluding, I desire to disclaim any expectation that ergot will supplant other modes of treatment. The expert surgeon will, as he always has, use his instruments to the neglect of remedies less summary in their effects, and in his hands the maximum of safety will obtain; but there are very few general practitioners who ought, or would be willing, to undertake enucleation of fibroid tumors of the uterus. I do claim, however, that the judicious gynæcologist will lose fewer patients, and make more cures, by the consistent administration of this medicine than can be looked for from surgery.

I am surprised that others who have written upon the subject should be so incredulous as to the effect of ergot, and the only way I can account for it is what, I think, I can see in their practice as related by themselves, viz., that they do not give it a fair trial. They fail to give it in large enough doses and persevere long enough in its use. The treatment of some of my successful cases extended over many months. When the pains that indicate efficient action, and always precede disruption and expulsion occur, the practitioner generally becomes alarmed, gives anodynes, and withdraws the medicine, thus abandoning the case, and declaring that ergot is a dangerous remedy. If he had witnessed the same, or even severer, pains in labor, he would have encouraged them, and so he should do in expelling the tumor, and the result would be a safe delivery. The tumor would be expelled and the patient relieved.

Before drawing my remarks on the use of ergot to a close allow me to mention some of the queries that have arisen in my own mind, or have been propounded to me by medical men. If the ergot acts so powerfully in expelling submucous tumors, is there not danger that it may rupture the capsule of the subserous variety, thus expelling them from the uterine substance into the peritoneal cavity, and endanger the life of the patient by causing peritonitis? A proper consideration of the conditions existing in such cases will justify my answering this query in the negative. There is a great difference in the influence exerted by the uterine fibres on the two varieties of tumors. In the submucous variety the whole power of the uterine contractions is exerted *toward* the tumor, driving it in the direction of the os uteri. When the tumor is subserous the contractions are from the axis of the tumor, and their effect is merely to render it pedunculated, and lessen the vascular supply going to it. The main effect, therefore, will be to check the rapidity of its growth, or to prevent its further enlargement altogether. This statement will sufficiently explain the effects of the medicine upon this variety of these morbid growths. Another question is, does the long-continued administration of ergot induce the gangrene of the extremities, that has been attributed to it? And still another, does it cause inconvenience or danger by affecting seriously the nervous centres? After having given this remedy in frequently repeated and large doses, and observed its effects with great care for a number of months consecutively, I can say that I have not noticed any such consequences. I am not prepared to assert that there is, and always will be, immunity from such effects. The worst symptoms I have witnessed are the severe and persistent pains, and the apparent inflammation of the uterus and peritoneum, where its action has been excessive. These symptoms, however, have been invariably controlled by proper treatment, and have in no instance proved disastrous. In other cases, when the tumor was slowly disintegrated and expelled, a moderate form of septicæmia has invariably occurred; but this condition has not been sufficiently grave to excite alarm in my mind.

A simultaneous employment of sorbefacients and the administration of ergot would, doubtless, in some cases prove more efficacious than either alone. But I am free to confess that this conclusion, so far as I am concerned, is arrived at more from therapeutic inference than observation. As I am giving the results of my own observation, more than those derived from the research of others, I deem it but fair to state that I have not given this combined method of treatment an extensive trial.

We should remember, in the employment of any course of treatment for the cure of these fibrous tumors, that reliable results are not to be obtained without the long-continued use of the remedies, and a thoughtful management of them in individual cases. And I must say, in this connection, that I believe a want of these considerations has led to much false experience. The treatment of fibrous tumors, located in other organs than the uterus, will not serve as a useful guide in the management of the uterine neoplasm. The same conditions do not exist elsewhere. The tumors are nowhere else surrounded with muscular fibres whose action can be commanded by any remedy within our knowledge. Whether the observation of the profession at large will or will not at present bear me out in my earnest belief in the curability of some of these tumors by the means I am now teaching, I do not know; but I am sure that there is so much logic in the method that it deserves a much more extensive trial than has hitherto been made of it.

Electrolysis.

Recently the treatment of fibrous tumors of the uterus by electrolysis has received considerable attention. Foremost among those who are pursuing investigations in this direction stand Drs. Kimball and Cutter, of Massachusetts. In a report to the New York Obstetrical Society Dr. Thomas gives a summary of the results of their treatment in thirty-six cases. The account given was very favorable, showing that a small number were entirely cured; that the growth of the majority was arrested, while less than one-third were not affected by the treatment. There were but two deaths in the thirty-six cases, and from the report I should judge this termination was not the result of the operation, the conditions of both cases being hopeless, in consequence of the grave conditions existing in connection with the tumor.

At a meeting of the American Medical Association in this city, Dr. Cutter was kind enough to illustrate his method of operating.

He uses electrodes invented especially for this purpose. They are spear-shaped and mounted upon handles, in order that they may be directed with the more certainty, and made to penetrate hard, fibrous growths without deviating from their intended course. The blades are five and one-half inches long, and are insulated to within nearly one inch of the point. Two of these electrodes are inserted through the abdominal wall into the substance of the tumor, the points being separated by a space of several inches. Through these electrodes a galvanic current is passed, the electricity being generated by eight pairs of carbon and zinc plates, excited by saturated solution of potassic bichromate and sulphuric acid, one part of the former to two of the latter. The time allowed at each sitting varies from three to fifteen minutes. It was said that this operation did not produce much pain, and was usually followed by a copious flow of urine. The number of operations for the individual cases varied from one to nineteen, and the intervals between them from a day to two months. In certain desperate cases this seems to me to be a valuable resource. Although, however, in the hands of these brilliant surgeons this mode of performing electrolysis seems not to be attended with the dangers one would expect to follow such free penetration of the abdominal cavity and galvanic excitement of these growths, most of us would hesitate to follow their example. They will, doubtless, pursue this mode of treatment sufficiently to test its efficacy and danger, and thus enable the profession to properly estimate its value. Possibly it will be found, by further experiment with electricity, that very much smaller electrodes and a less powerful battery may produce altogether effects sufficient to dissipate these tumors, and at the same time greatly reduce the hazard of the operation.

CHAPTER XXXV.

SURGICAL TREATMENT.

Removal of Polypoid Tumors.

THE first thing I have to say about the operations intended for this purpose is that they should be as simple as possible, compatible with thoroughness. It is not necessary to exemplify this idea. It is self-evident, and yet often ignored. The most effectual plan of avoiding danger is to have a distinct idea of the sources whence the danger may arise, and in connection with these tumors dangers may arise, (1) from laceration, contusion, or other damage to the uterus, resulting in hæmorrhage or inflammation; (2) incomplete ablation,—the remaining portion producing septicæmia; (3) shock sometimes following protracted efforts at removal. This last is a very important source of peril.

These dangers will, therefore, for the most part be proportionate to the extent of manipulation and instrumental procedure and the incompleteness of the operation. The old operation of tying the neck of the tumor, and allowing it to slough away, especially when it was situated in the uterine cavity, combined all the causes of danger above enumerated except that arising from hæmorrhage; and it is a curious fact that this operation was invented for the sole purpose of avoiding hæmorrhage, which is really the least dangerous of all, according to my observation. Indeed I have never seen serious hæmorrhage caused by the removal of a polypus, however effected. The practice of ligating the tumor and then amputating it is to a less degree open to the same criticism.

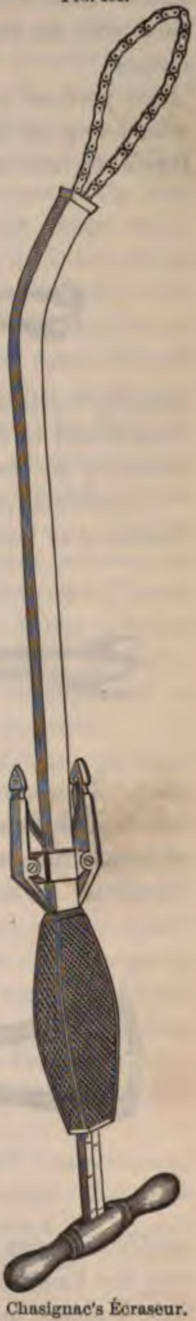
Torsion or amputation are the methods now usually employed by the best gynæcological surgeons of the present day, and the first is the one I have for several years resorted to in almost every instance. Amputation may be performed by the scissors, knife, by the écraseur or galvano-cautery wire. All possible danger from hæmorrhage will be avoided by the last means indicated; but I may state that there is scarcely any danger of hæmorrhage from the use of either of the other instruments. Torsion is performed by seizing the tumor with strong vulsellum or fenestrated forceps and twisting the tumor several times around and making moderate traction until the detachment and removal are completed. In order to amputate a polypus when the tumor is partially or wholly expelled from the uterus the tumor should be drawn down with one of the forceps mentioned until its attachment is brought into view, when with the scissors or the knife the neck may be divided as close to the uterine attachment as possible without cutting the substance of the uterus; or the neck of the tumor may be surrounded by the écraseur or galvano-cautery wire and separated by it. A tumor attached to the fundus, or high up in the body of the uterus, cannot always be drawn down and amputated in this way without causing inversion of the organ, and consequently a knife in the shape of the blunt hook in our obstetric case, with an edge upon the concavity of the curve, will be necessary. This may be introduced and guided as nearly as possible to the point of attachment by the finger or hand. This process is very much facilitated by a piece of twine passed through a small hole in the extremity of the hook; the twine should be long enough to hang out of the vagina and give a firm hold. When placed, the convexity of this knife should be turned towards the neck of the tumor and a sawing motion executed by the handle and twine until the tumor is cut through.

The chain of an écraseur may be carried to or near the point of attachment by means of two flexible rods with small holes in the extremities. The wire is passed through the opening at the ends of the rods, and being held closely together they are introduced, carried behind the polypus, as high up as possible. One of the rods is then held in position while the other is carried around the tumor, thus encircling it by the wire. Sometimes it will be easy to pass the wire by drawing a loop of it through the perforated ends of the rods, large enough to pass entirely around the lower end of the tumor, and as the rod ascends, the wire surrounding the polypus is carried up to the point of attachment. When well placed, the ends of the wire may be fitted to the écraseur, and that instrument carried up to the ends of the rods. The écraseur can then be manipulated until the tumor is separated. There is no need of removing the rods from the wire before the écraseur is fixed, as their presence does not complicate the operation.

All this explanation presupposes an open or dilatable condition of the os uteri which does not always exist. If the mouth of the uterus is not already thus patent, it should be dilated by compressed sponges until it will admit of free access.

It requires much experience and tact to perform this operation with the écraseur, and we will find in the books and periodicals a number of instruments intended to facilitate the application of the wire to the neck of the tumor. The dangers connected with this operation are those caused by the protracted efforts to replace the chain or wire of the écraseur, and an inability always to remove the whole tumor.

FIG. 151.



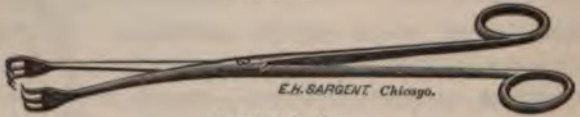
Chasignac's Écraseur.

The operation of torsion can be performed when the tumor wholly or partly occupies the vagina without any preparation, and is preferable, because the tumor is removed at the point of attachment. The reason of this is, the point of attachment is always the weakest, and yields to the force applied before any violence occurs to the other parts of the tumor or the uterine tissue. The tumor is thus completely removed, and without protracted manipulation. No hæmorrhage results, for two reasons: 1, there are no large vessels entering the tumor, and the small ones are torn instead of being cut as in amputation; 3, septicæmia does not occur, for no portion of the tumor is left to slough.

When the tumor is higher up, or within the cavity of the uterus, torsion is equally appropriate, and more easily executed than amputation with or without ligation. Of course if the mouth of the uterus is not open enough to permit the seizure of the polypus at a point high enough to secure a sufficiently firm hold upon it, dilation is just as necessary as in the other operations. The amount of dilation, however, will not need to be so great. In performing this operation, the operator must guide the forceps with his fingers to the part of the tumor necessary to enable him to fasten the instrument upon or near the central part of the polypus. In two instances when the tumor was too large to be firmly held by any forceps at my command, I introduced the hand inside the uterus and detached the tumors by rotating them with the hand until they were detached, and afterwards making traction with the forceps. I brought them into the vagina and delivered them with the obstetrical forceps. One of these weighed forty-six ounces.

To perform torsion for the removal of a polypus, the surgeon, after fixing the instrument firmly in the desired position should be careful to twist it enough to be sure of its detachment before commencing traction. Not less than from four to six complete revolutions should be effected. This procedure will prevent the danger of lacerating the tissues of the uterus.

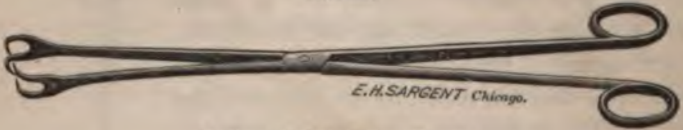
FIG. 152.



Small Vulsellum.

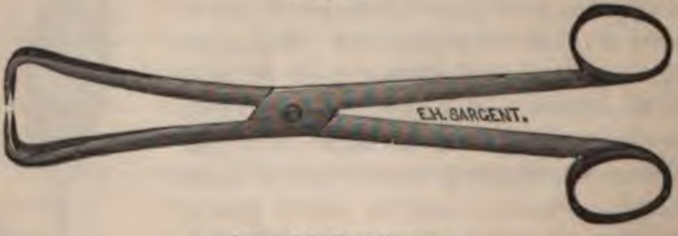
The greatest objection urged against the operation of torsion is the likelihood of lacerating the wall of the uterus at the point of attachment. If we will call to mind what was said about the relative thickness of the muscular strata upon each side of the different kinds of fibrous tumors, we will at once perceive the groundlessness of this objection. In the pendulous variety, the whole wall of the uterus is outside the point of attachment and is strong enough to resist the very few fibres that are carried down with it. Indeed in the polypus there is almost no substantial attachment except that formed by the

FIG. 153.



Medium-sized Vulsellum Forceps.

FIG. 154.



Large Vulsellum Forceps.

investing mucous membrane. If, therefore, the torsion is performed with sufficient thoroughness before traction is begun, laceration of more than the superficial tissues surrounding the neck of the tumor is next to impossible, and consequently the operation is perfectly safe.

Hæmorrhage is not so likely to occur after torsion as when the tumor is amputated by the knife, or scissors, or even by the écraseur. The danger of hæmorrhage, then, is an objection that cannot with any show of reason be urged against torsion. I have never seen hæmorrhage succeed torsion. The contractions of the uterus which take place after removing the polypous growth from the cavity of the uterus in the great majority of cases is as effective in the prevention of hæmorrhage as it is when its contents are expelled at the time of labor. I trust that it is not necessary to dilate further upon this part of the subject. However, let me remind the reader that as hæmorrhage, although improbable, is yet possible, we should be prepared for it. After what has been said under palliative treatment about the management of this complication, it will not be necessary to enlarge upon that point.

After an operation of this kind the only treatment necessary is perfect quietude for a few days, cleanliness by injections, and if needful the administration of anodynes to quiet pain. When a tumor has been removed from high up in the uterus the patient should of course be carefully watched, and if symptoms of inflammation or septicæmia arise they should be treated by suitable measures.

Surgical operations having the relief of hæmorrhage for their primary object, but which sometimes eventuate in the cure of the tumor, have been recommended and successfully practiced.

The first I shall mention, is that brought into general notice by the late J. Baker Brown, viz., incising the cervix.

Mr. Brown first discovered that free incision of the cervix would check hæmorrhage by doing it as a preliminary step to coring or gouging out some of the tumor. He says, in tumors of recent origin and moderate size, free incision not only checks the hæmorrhage, but often arrests the growth of the tumor, and even causes its disappearance.

Of fourteen cases thus treated, in two only was it necessary to incise or gouge the tumor.

When the vagina is small he first dilates it with bougies (some prefer sponge surrounded by thin india-rubber tubing). After the preparation of the vagina is satisfactorily accomplished, he exposes the cervix by introducing Sims's speculum, seizes, fixes, and incises it freely, its whole length from within outward with Simpson's metrotome, the incisions being made on both sides. He then plugs the cavity thus made with lint saturated with sweet-oil (if the oil was carbolized it would be better), to prevent hæmorrhage and to exclude air. Mr. Brown lays great stress upon a thorough plugging of the cervix after the operation, and filling the vagina with cotton to support the cervical plug. He allows this to remain for forty-eight hours. He insists upon making the incision in the cervix to extend within the internal os uteri. The cavity produced in the cervix by the incision should be kept dilated until the surfaces cicatrize. If then the symptoms are not relieved, he proceeds to the operation of gouging out a piece of the most dependent part of the tumor. This may be done with a knife, but he prefers pointed scissors.

The object of removing a part of the tumor is to inaugurate a destructive inflammation, which will result in the disintegration and expulsion of the tumor.

Sir J. Y. Simpson introduced the cautery or caustics into the substance of the tumor for the same purpose. In two instances I have caused fibrous tumors to disappear by passing cotton-wool into them. A large trochar was thrust through the cervical cavity as deep into the tumor as practicable, and after the stilet was withdrawn, several pieces of cotton secured by thread around them, were passed to the extremity of the canula into the tumor and held there by a probe, while the canula was also withdrawn. A discharge of fetid pus and serum followed moderate inflammation, and the tumor grew smaller until it disappeared.

With my present experience, I would commend the administration of ergot, as soon as the tumor was effected by either of these operations, with a view to aid in the expulsion of the growth.

For the relief of excessive hæmorrhage, Dr. Atlee passed a blunt-pointed bistoury into the cavity of the uterus, and by turning the edge of the instrument upon the tumor, cut deeply into it. The dilatation of the cervix, so generally indispensable, can be done by compressed sponge or sea-tangle tents, instead of incision.

Enucleation.

This term is applied to the operation of splitting the capsule and turning the tumor out of its bed.

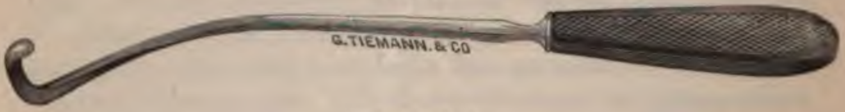
In favorable cases this operation is easily performed, but such cases are very rare; generally it is one of the most formidable and dangerous operations that we are called upon to perform. I say this, with reference to the operation, when it is done by the most skilful with long curved scissors, at the junction of the tumor with the wall of the uterus the whole width of the tumor; at the middle of the incision another should be commenced, and carried as high up over the longitudinal centre of the tumor as possible.

These incisions should not penetrate the tumor to any great depth. They should simply divide the capsule, and when the capsule is not adherent, the space between it and the tumor will be easily recognized.

The fingers can then be inserted between the capsule and the tumor, thus separating them as high as the operator can reach. This separation should extend around the whole circumference of the growth.

The fingers will not be long enough, usually, to reach over the upper end of the tumor; the separation may be completed by Sims's enucleator as seen in Fig. 155. It may be passed with the concave side next to the tumor, gently to the top, and then passed around in any direction until the separation is complete.

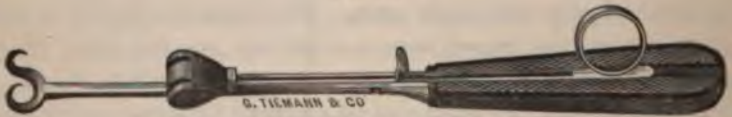
FIG. 155.



Sims's Enucleator.

While this last part of the operation is being accomplished, another vulsellum should be fastened upon the tumor as high up as possible, and by traction made to depress and steady it. When the tumor is thus separated from its capsule, we should make an effort to turn it upon its longitudinal axis.

FIG. 156.



Sims's Guarded Hooks to aid in drawing the Tumor.

This will enable us to determine whether it is entirely detached or not, as well as to dislodge it from the muscular bed into which it has been moulded. If the detachment is not complete, the point of resistance will generally be discoverable by swaying it from one side to the other, or backward and forward, thus enabling us to apply the enucleator to the right place, and complete the separation. At this stage of the operation we may make more traction, the dislodgement will be facilitated by pressure upon the fundus of the uterus by the hand of an assistant. When the tumor is not too large, it will descend as we pull upon it, and pass out through the vagina. If, however, it is so large that it cannot be made to pass through the vagina in this way, then the tumor should be split by the scissors from the bottom upward, as near the top as possible, without danger of wounding the fundus of the uterus, and then (as Dr. Sims instructs us) one-half should be seized by the vulsellum and drawn down, so as to cause the tumor to undergo evolution; the portion grasped coming down first, and by virtue of its attachment at the top, brings the other after it; but if this cannot be done, we must cut off the part in the grasp of the vulsellum, seize another portion and treat it in the same manner, until the whole is removed by pieces.

Under favorable circumstances this operation may be performed as above described; but obstacles will sometimes be met with that will give the best operators much trouble, and render the results very unsatisfactory.

The first I will mention is that presented by imperfect capsulation, or adhesion of the tumor to the walls of the uterus. Some cases occur where the tumor is not isolated by a capsule from the uterine structures, but the substance seems to be continuous with them.

Whether this condition depends upon original formation, or is the result of disease, which causes adhesion between the surfaces of the tumor and the capsule, I am not able to say; but in either case it presents an insurmountable obstacle to the perfect removal of the tumor; and, if this condition could be diagnosed beforehand, it would contraindicate the operation for enucleation.

When in the performance of the operation we meet with this obstacle, and can clearly ascertain its existence, I think it would be best to gouge out as much of the tumor as we could safely remove, and then commence the administration of ergot, to remove the remainder. I would do this, because cutting through the superficial layer of the tumor would be sure to disturb its vitality.

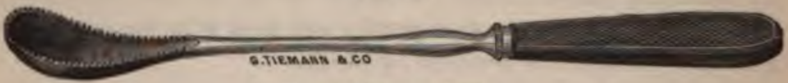
The next obstacle to the removal of the tumor by enucleation is the great size to which it may attain. I have already spoken of the necessity of sometimes cutting the tumor in pieces with scissors to facilitate its removal. The wire écraseur will often be very useful in lessening the size of the tumor.

We slip the wire over a portion of the tumor and cut it off, then pull down more with the vulsellum, when that is possible, and pass the wire over another piece, and so on until it is small enough to remove.

This plan, where practicable, and especially in the hands of the experienced operator, is the safest way. Dr. Thomas's serrated spoon, or a very small, crescent-shaped knife, such as is used by Dr. E. Warren Sawyer, of this city, for cutting into and removing mass, may, by careful use, aid us in this respect.

Hæmorrhage constitutes a very formidable complication, in rare instances, in the operation of enucleation. I have never met with this difficulty in the removal of these tumors by any method; but there are too many cases on record to leave any doubt that we should be provided with the means of meeting hæmorrhage of the most formidable degree.

FIG. 157.



Thomas's Serrated Spoon.

In considering this matter in relation to the cases reported, I believe it to be the result of inertia, or want of firm contraction in the muscular fibre, or on account of the separation of a vessel in the uterine walls. In either case, if we continue the operation, we should follow the example of Dr. Emmet in throwing ice-water freely into the cavity of the uterus. I would also resort to obstetric doses of ergot; both of them would serve to contract the vessels of the uterus, and overcome the inertia by prompting the uterine fibres to act. If, in spite of these remedies, the hæmorrhage is so copious as to make delay very dangerous, we may inject the uterus with tincture of iodine; but I should greatly prefer immediate and complete plugging to anything else. If the hæmorrhage has been sudden, shall we proceed with the operation? I think not, but would assign this to the category of cases which should be treated by ergot.

What has been said of enucleation has reference more particularly to deeply-seated submucous tumors which project into the cavity, but are imbedded their whole length in the wall of the uterus. The more superficial or sessile variety of submucous tumors project so far into the cavity as to appear to be implanted upon the wall beneath the mucous membrane of the uterus. The attachment, or base, upon which it sits, is nearly or quite the size of the tumor. This variety can be removed with much more facility.

After exposing the tumor, and steadying it by traction with the vulsellum, it may be separated from the wall, and that very neatly by the serrated spoon. This instrument should be inserted through the capsule, at the juncture between the tumor and the uterus, by a rotary sawing motion; the growth severed by passing it through the capsule in any direction where the attachment exists.

This is Dr. Thomas's method of removing this variety of tumors.

Dr. Emmet pulls them steadily and persistently down into or toward the vagina; this allows the upper portion of the uterus, from which the tumor is withdrawn, to contract. Further traction upon the tumor gives room for the fibres beneath the point of implication also to contract, until the circumference of the attachment, becoming smaller, assumes a pedunculated form, and may be severed by the écraseur, scissors, or knife. This form of tumor may also be removed by passing an écraseur over and amputating a part of it, and then, by means of the finger or enucleator, remove the remainder.

Patients who have undergone any of these operations for removal of fibrous tumors may die from shock, hæmorrhage, inflammation, or septicæmia.

For the treatment of shock, I will refer the reader to the subject as taught in the after-treatment of ovariotomy.

I have already said sufficient upon the subject of treatment of hæmorrhage as a complication in such cases.

Inflammation, when it occurs, should be treated as in the after-treatment of ovariotomy.

Septicæmia may be more effectually treated in connection with this than almost any other of the great operations, as we can keep the cavity clean by hot-water injections, and disinfected by carbolic acid. For the general treatment, I will refer the reader to the after-treatment of ovariotomy.

Laparotomy,

For the extirpation of the tumor, is another surgical resource, of which we may avail ourselves under circumstances where the employment of less hazardous measures are either impracticable or unavailing.

The extirpation of the tumor, where it is subserous and pediculated, has been performed a number of times successfully; and where the tumor is not adherent, there is no great difficulty in removing it in this way.

The incision through the abdominal wall may be made in the same place and in the same way as for ovariotomy, although it will be necessary evidently to make it larger.

The pedicle being exposed and ligated by a double silk ligature, it will be found that the substance through and around which the ligature is passed, is not so firm as the pedicle of an ovarian tumor; hence it will be necessary to be more careful, lest it give way and cause secondary hæmorrhage.

The ligature should not be passed through any part of the tumor, but between it and the uterine substance; then, to get sufficient substance beyond the ligature, the capsule may be divided an inch from the ligature and the tumor enucleated.

When the tumor is sessile, instead of being pediculated, and the base too broad to be included in a ligature or clamp after the abdomen has been opened, it may be enucleated by splitting the capsule and peeling it out with the fingers. I would suggest that when enucleation has been thus performed, that an opening be made from the bed of the tumor into the uterus, so that the discharge from the empty capsule may find its way out through the uterus and vagina.

To secure this evacuation, we might pass a drainage-tube through the opening into the vagina. Where this, or some other effective arrangement for drainage is made, the capsule may be closed by silver sutures, and the abdominal wound treated as for ovariotomy. If the capsule should not be large, and the operation has been performed, as it always should be performed, under the antiseptic conditions, it may not be necessary to make any provisions for drainage.

When a subserous tumor is situated on the posterior wall, occupying the cul-de-sac behind the uterus, it may be removed by making an incision along the median line of the posterior vaginal wall and removing the tumor through the vagina. Dr. R. S. Sutton, of Pittsburg, has successfully removed one in this way, as also has Dr. Clifton Wing, of Boston.

Of course none but the small-sized tumors can be removed in this way.

The thermo-cautery, or the actual cautery, should always be in readiness to stop hæmorrhage in either of these operations.

Laparo-hysterotomy.

The last measure I will mention, as one resorted to for the relief of patients afflicted with these tumors, is laparo-hysterotomy, or the removal partially, or wholly, of the uterus with the tumor.

This operation resembles in many respects that of ovariotomy.

Our preparation of the patient should be the same. The anæsthetic and the carbolic spray are used in the same way, as also is the antiseptic dressing.

When we undertake the operation, we should be especially well prepared with means of arresting hæmorrhage. To this end we should have in readiness the thermo-cautery, a number of hæmostatic forceps, persulphate of iron, etc., and every other arrangement should be complete, so that there might be no delay from this cause, as the operation is almost of necessity one of long duration under the most favorable circumstances; and it should be remembered that everything, except haste, which may shorten the duration of the operation is of great importance, as the longer the operation lasts, the more depressing its effects. For fear that what I may say should encourage precipitation, I would protest against hurry, and advise deliberation in all the steps of the operation.

The incision is made in the same place and manner as in ovariotomy; first a small incision, say four inches long, for exploration, to ascertain the character of the tumor, its probable adhesions, and its relation to the viscera. As some viscera, especially the intestine, is more frequently found to lie across the front part of the tumor, the necessity of ascertaining any such condition is much greater than in ovariotomy.

When it comes to the separation of the adhesions and the removal of the tumor, the size of the incision must be increased sufficiently to permit the extraction of the whole mass, instead of an effort being made to lessen the size of the tumor, as in ovariotomy.

An exception may be made to this teaching, if the tumor is not entirely solid, but of the fibro-cystic variety. In this case, if a large cyst presents itself, we may hold the tumor close to the incision with vulsellum forceps and evacuate the fluid through a large trochar, or an incision into the wall of the cyst. If in doing this we find there are a number of cysts, we may introduce a finger, or even the whole hand, as I once did, into the centre of the tumor, and break it up as far as possible. In this way we may sometimes very greatly lessen the size of the tumor.

In this operation, as in ovariotomy, the size of the incision is of great importance; in no case should we risk bruising or tearing the abdominal walls.

In operating for fibrous tumors, we should not trust to the sound in searching for adhesions; the hand alone should be used, and the whole surface examined before any attempt is made to dislodge the tumor.

We should also remember that the adhesions, as a rule, are more vascular than in ovarian tumor, and hence, when necessary, they should be ligated twice and cut between the ligatures.

When solid, the tumor may be lifted from its bed more easily by means of the vulsellum forceps than by the hands. After it is lifted out, the uterus will generally be found to be removed from the pelvis with the tumor constituting a part of the mass.

If there are no more adhesions, the junction between the body and the cervix uteri should be sought for and ligated at this point with a strong double ligature.

Before applying the ligature to the pedicle, remember that the bladder is in danger in consequence of its proximity. We should remember also, that the tissues in the pedicle are less yielding than the pedicle of the ovarian tumor.

"Dr. Léon Labbé communicated, at a late meeting of the Académie de Médicine, a note relative to a modification of the operation of hysterectomy as applied to fibrous tumors (exsanguinification of the tumor).

"Gastrotomy applied to the treatment of fibrous tumors of the uterus is an operation about which there is no longer any dispute. The note which M. Labbé communicated to the Academy is not for the purpose of describing this operation, but simply to make known an important modification that he has introduced in the operative process.

"The quantity of blood contained in these enormous uterine tumors is always considerable; it is certain that the loss of this blood by the ablation of the tumor is a factor, the importance of which cannot be passed over, especially if we consider that the extirpation of these tumors almost always takes place in the cases of women who are in an advanced state of cachexia. Based upon the principle which had led Esmarch to apply a compress bandage on limbs which were to be amputated, M. Labbé thought the same bandage could be utilized to press back into the general circulation the blood contained in large uterine tumors, and thus practise a kind of transfusion.

"The patient for whom he had occasion to apply this principle for the first time, was in a deplorable condition before the operation, and she succumbed six days later to septiæmic symptoms; but M. Labbé has been able to prove that the enormous fibroma upon which compression was first practiced was entirely exsanguined, and that about a litre of blood was by this means restored to his patient.

"The theory which led M. Labbé to apply Esmarch's compress to restore to the general circulation, at the time of their extirpation, the blood contained in such great abundance in the fibro-myomas of the uterus, is very clearly justified by the case which has been reported to the academy.

"The peculiar conformation of the tumor was such that no very particular method was employed in this case; but if the tumor to be operated on is more regular in form we would have just reason to fear that the application of the elastic band might present some difficulties. In this case, to fasten the band and give it a support we should transfix the tumor near its summit by one or more metallic needles. Several of these needles may even be placed at different heights so as to give support to the compress, and to prevent its slipping.

"M. Labbê concludes:

"1st. That there must be a positive advantage in operations on large uterine fibro-myomas removed by gastrotomy, in restoring to the patient the blood which these tumors always contain in large quantity.

"2d. That this result may be employed in a complete manner by applying to the tumor Esmarch's compress, or any other compress endowed with the same elastic properties."—*Gazette Hebdomadaire*, 6 *Août*, 1880; *American Journal Medical Sciences*, October, 1880.

When the ligature is satisfactorily applied we must remember also that in cutting away the tumor there is great danger of retraction of the parts included in it. The abdomen must be carefully cleansed and hæmorrhage entirely checked before closing the wound.

The after-treatment of these cases is more difficult than in ovariotomy, as the shock is ordinarily much greater, and inflammation and septicæmia more likely to follow the operation.

I have performed the operation three times, and in all instances lost my patients from the severity of the shock. My cases were of the fibro-cystic variety.

I do not believe the complete extirpation of the uterus and ovaries will bear any reasonable comparison with ovariotomy, even double ovariotomy.

In comparing these operations we must remember that when the uterus and both ovaries are removed, the whole genital system, with all its reflex capacities and sympathetic relations, is suddenly torn from its connections. The complex system of nerves supplying these organs with centric connections, the moral, emotional, and physical energies they are continually exerting over the whole of the rest of the organism are destroyed. The importance of the relations between the genital system of woman and the rest of her body and brain is so great that it can scarcely be appreciated. These relations constitute the major part of her life.

From such considerations, I can but believe that the shock of this operation is incomparably greater than in ovariotomy or double oöphorectomy.

When one ovary is removed, the other maintains the ovarian influence over the uterus and the system at large. When both are removed, there is still left the larger part of the genital nervous system, with its relations, although impaired, not entirely severed; and we know, from observation, that in such cases womanhood is well preserved.

In operations of this kind, conservative surgery is of the greatest importance, and we ought never to remove the ovaries when we can preserve them.

While there will continually occur cases for which this operation is the only remedy, experience will prove it to be an operation of much more gravity than ovariotomy in any of its forms.

Kimball, Burnham, H. R. Storer, Thomas, and other Americans have performed this operation successfully.

In Europe, Péan, Koeberle, Wells, Clay, and others have contributed toward perfecting hysterectomy for fibrous tumors.

Oöphorectomy—Battey's Operation—Spaying.

These are terms intended to designate an operation for the removal of the ovaries.

To Dr. Robert Battey, of Rome, Georgia, is due the credit of first removing the ovaries for the purpose of artificially inducing the menopause.

The knowledge that the change of life generally brings relief from the intolerable and irremediable forms of oöphoro-neuroses that so often perplex the practitioner, would lead to the hope that the removal of these bodies would produce similar cures. This operation has been before the professional public for about seven years, and there are reported, according to Dr. Paul F. Mundé (*American Journal of Obstetrics*), up to this time 120 cases, with an average mortality of 22.6 per cent. Dr. Mundé very correctly observes that if the positive benefits of the operation were as assured as the favorable rate of mortality, the opposition to it would soon cease. The operation has also been repeatedly performed for the purpose of arresting the growth of fibrous tumors of the uterus, on account of the favorable effect the natural menopause so generally produces upon them, and in some instances with very favorable results.

We should not forget, however, that menopause is not the change of life.

This condition—menopause—is sometimes brought about by some of the very conditions for which Battey's operation is performed without producing change of life.

It is true that the ovary, if not the essential agent, is certainly necessary to the proper development of the female genital organs. After the genital apparatus is mature, it is probably the fountain of the excito-motor influence upon which depends the functions of the uterus and its appendages in all their relations to the generative acts. The ovaries ought not, therefore, to be classed as appendages to the uterus; rather the latter is, in the proper sense, an appendage to the former.

As an accompaniment of ovulation, which is the development and disengagement of the ovule, the trophic energies of the uterus are excited in corresponding degree.

The repletion and activity of its circulatory system corresponds to like changes transpiring in the ovaries, and the nervous system of the uterus is acted upon by that of the ovaries, prompting glandular changes in the mucous membrane.

Even the intramenstrual growth and hypertrophy of fibrous and other tissues of the uterus are but the reflex complement of the stromal hypertrophy of the ovaries. As the ovarian excito-motor stimulation is withdrawn from the uterus, involution simultaneously occurs in the two. It is true that the removal of the ovaries withdraws the source of the excito-motor influence from the uterus, and this generally brings about the menopause in the sense of the cessation of periodical hæmorrhages; but the same operation, after the uterus has obtained maturity of organization, and especially when its tissues have become hypertrophied (vascular, nervous, and muscular), leaves a large, highly organized organ without its regulating apparatus, the subject of any morbific cause which in its nature has any aptitude for the production of uterine derangement.

We see this illustrated in the case given by Dr. Trenholme, the after-history of which, subsequent to the operation, I give below.

This, I think, is the effect produced by suddenly removing the ovaries in large fibrous tumors of the uterus. In smaller growths, and a less vascular state of the uterus, the same conditions exist, and the same consequences will follow, only in a less noticeable degree.

The senile menopause, one of the symptoms of the change of life, is the consequence of gradual changes in all of the organs concerned. This change is a degeneration of the genital organs.

The tissues are not merely diminished in size, but they degenerate into those of a lower order of organization, and this same degeneration extends itself to the morbid growths of the organs.

Tumors lose their vascularity, their fibres disappear, and the whole becomes a degenerate mass.

It is not certain how much of this general and regular degeneration is due to the presence of the ovaries and their excito-motor energies in prompting it and in governing its nature.

It is a plausible supposition, however, that as the ovarian changes and influences are so great in building up the uterus and sustaining its functions, that it might be as efficient in its retrograde transformation, thus making it more complete.

The removal of the ovaries in the presence of a large fibroid and hypertrophied uterus, simply takes away their governing agency before the process of degeneration has begun. We have then a highly organized uterus and tumor, and if degeneration takes place at all,—which I very much doubt,—it is not normal in any respect, and may be the cause of morbid instead of salutary conditions.

We then exchange one evil for another; a greater for a lesser it may be; to the advantage of the patient somewhat, but yet not so as to make a perfect cure.

Dr. E. H. Tenholme, of Montreal, reports a case* of abdominal oöphorectomy for a large fibrous growth of the uterus in January, 1876. Severe uterine pains and hæmorrhage were the actuating reasons for the operation. The patient according to her own account was very much improved for four months succeeding the operation, the uterus then (in May, 1876) suddenly commenced enlarging and gave her very great pain. The enlargement and pain were accompanied by copious hæmorrhage. As the result of this attack, she was confined to her bed more or less constantly for three months. Recovering from this attack she was able to support herself a part of the time as a saleswoman, and a part of the time as a nurse, for several months.

In December, 1877, she had a similar attack and of like duration. The patient has now been in this city about two years, and I have had the opportunity of seeing her in two or three of these attacks.

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* Obstetric Journal of Great Britain, October, 1876, p. 430.

The pain is exceedingly severe and requires the use of anodynes in considerable doses to relieve it. In April, 1878, one of these attacks commenced and kept her in bed for several weeks. And in December, 1879, another similar attack prostrated her, with pain and hæmorrhage, lasting until the middle of March, 1880.

During the whole continuance of this attack she was in the Woman's Hospital, of the State of Illinois, under my immediate supervision. During the early part of this last paroxysm, the uterus was enlarged until it extended two inches or more above the umbilicus, and occupied all of the central and lower portion of the abdomen to within two inches of the crest of the iliac bones on either side.

Since the subsidence of the symptoms, the size of the uterus and tumor have decreased about twenty-five per cent.

It is now somewhat elastic, whereas, during the early part of the paroxysm it was very firm.

The health of the patient is so very poor and uncertain, and she so dreads the suffering she experiences during the attack, that she now begs the removal of the entire mass. She is an intelligent woman and has made herself quite conversant with her condition, and the extreme measures sometimes resorted to for relief, and is entirely willing to abide the consequences of the operation.

I am deterred from indulging her wish for removal of the tumor by hysterectomy, from the apparent general and very firm adhesions of the front surface of the tumor to the anterior walls of the abdomen.

Whether this patient's life has been prolonged by the operation or not, of course no one can know. That her condition, so far as suffering is concerned, has been greatly improved, I think no one witnessing her agony and prostration during a paroxysm would hardly believe. And while I have no doubt of the thoroughness and skill of the operation, I must say I believe it to be a partial failure.

In presenting these reflections on the difference between the effect of a natural change of life and oöphorectomy upon fibrous tumors of the uterus, I do not wish to be understood as opposing oöphorectomy altogether. They, however, make me hesitate to give an unconditional adhesion to the practice, even where in our present knowledge it would seem indicated.

The following table, showing the result of all the reported cases within his reach, was published by Dr. Mann, October, 1880:*

Operator.		Primary Result.		Secondary Result.		Reference.
		Recovery.	Death.	Cured.	Not Cured.	
Trenholme, . .	1	1	. .	1		Obst. Journ., G. B. & S., 76.
Hegar, ...	13	10	3	7	1	Centralbl. f. Gynæcology, No. 21–79.
Goodell, ...	2	1	1	1	. .	Goodell, Lessons in Gynæcology, 2d ed.
Martin, ...	2	2	. .	2	. .	Centralbl. f. Gynæcology, No. 21–79.
Kaltenbach, . .	1	. .	1	. .	. .	Hegar, Journ. Klin. Vorträge.
Freund, ...	3	2	1	2	. .	Centralbl. f. Gynæcology, No. 21–79.
Shröder,. . . .	1	1	. .	. .	1	Centralbl. f. Gynæcology, No. 21–79.
Tait, ...	11	9	2	9	. .	British Med. Journ., July 10, 1880.
Pernice, ...	1	1	. .	1	. .	Arch. f. Gyn., Bd. xiv, H. 3.
Von Nussbaum, .	1	1	. .	1	. .	Goodell, loc. cit.
Tyng, ...	1	1	. .	1	. .	Personal Communication.
Mann, ...	1	. .	1			
	38	29	9	25	2	

Dr. Mann thinks that the operation when performed for fibroids, should be through the abdominal wall; as they are generally removed from their normal position, by being lifted up as the uterus becomes larger.

The effect of removing the ovaries for intolerable and incurable cases of oöphoro-neuroses, is quite another thing; for then we remove the cause of the disease, or rather the symptoms; because, as they are the organic origin of the neuroses, their condition is the disease, and like amputating a limb, that is incurably diseased, to get rid of the symptoms, we cut off the ovaries for the same purpose.

There is another side to this subject, however, and that is the general condition of the patients, who are the subjects of these nervous symptoms, is such, as, in part, to account for their suffering. And we sometimes find that a radical change in the circumstances under which they live, will dispel their trouble. Instances of this kind must have fallen under the observation of most practitioners of long experience. Muscular labor, outdoor exercise, and the loss of luxuries, when brought by inexorable bad fortune, have done wonders in the way of removing oöphoro-neuroses.

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* Oöphorectomy for Uterine Fibroids, by Matthew Mann, A.M., M.D. Clinical Lecturer in the Medical Department of Yale College. American Journal Obstetrics, October, 1880.

Then the question comes up, whether we ought to spay our patient or prescribe and enforce the proper amount and kind of primitive living necessary to revolutionize her nervous functions.

The former course is the easiest, and, I am sorry to say, most acceptable to some patients.

The following are Dr. Battey's* conclusions as to the proper cases for oöphorectomy:

> "It is not a question as to whether extirpation of the ovaries shall be resorted to, or whether valerian or asafœtida be given, or resort be had to any other known resource of gynæcology, but the case must be narrowed down to this, as the only expedient available."

The following are the classes in which he regarded the operation as justifiable:

> "1. Congenital absence of the uterus, coupled with ovulation, in which, at the menstrual epochs, there are violent vascular and nervous perturbations, that are either dangerous to life or destructive to the health and happiness of the patient. 2d. Complete occlusion of the utero-vaginal canal. 3d. Certain cases of menstruo-mania, absolutely incurable by any of the known resources of medical science or art. 4th. Ovarian epilepsy. 5th. Certain cases of chronic ovaritis. 6th. Certain cases of amenorrhœa. 7th. Ovarian hernia. 8th. Submucous or interstitial fibroids. 9th. Incurable flexion of the uterus. 10th. Cæsarean section."

This last, of course, means cases in which patients cannot be delivered *per vias naturalis.*

In deciding whether or not he should advise the operation, he asks himself three questions:

> "1st. Is this a grave case? 2d. Is it a case incurable by any other known resource of medical and surgical art? 3d. Is it curable by the menopause?"

If all are satisfactorily answered in the affirmative, he regarded the case as a proper one by the operation known as Battey's. If either question cannot be answered satisfactorily, he regarded the case as one in which the operation is not justifiable.*

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* "What is the Field for Battey's Operation?" A paper read before the American Gynæcological Society in Cincinnati, September 1st, 1880, by Dr. Robert Battey, of Rome, Georgia.

While these positions are not all as definitely put as they ought to be in a matter of so great importance, one thing is made plain by them, and that is, Dr. Battey regards the operation as a last resort.

We are not yet able to do more than practice Battey's operation according to the imperfect light we have upon the subject, because it is the only available means of relief we can command. By intelligently watching effects we will be able after awhile to arrive at definiteness of indications for its employment.

Physical and Psychical Results.

I have four patients from whom I have removed both ovaries, whom I occasionally meet, and, so far as I can see of them, and from explicit assurances given by them, I believe they are not unsexed in any other sense than that they are sterile, and do not menstruate. In morals, manners, appearances, affections, propensities, and voice, they remain the same.

The operation of removing the ovaries per vaginam was first performed by Dr. Battey. After exploring the posterior and vaginal walls Dr. Battey made an incision in the central line, about one inch and a half long, and with his finger drew the ovaries through the opening, ligated them and cut them off.

Since then the operation has been repeated in the same way by others. The ovaries have also been removed a number of times through the abdominal walls. The main obstacle to be met in the performance of the operation is the adhesions arising from previous or existing inflammation. Sometimes this obstacle is so great that the operation through the vaginal wall is extremely difficult, and occasionally quite impossible. In such cases laparo-oöphorectomy would be the easiest operation.

The incision in this operation should be made in the same place as for ovariotomy, and no larger than is necessary. Hegar sometimes removes the ovaries through an opening an inch long, but probably two inches will be a more frequent incision.

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* October No., 1880, American Journal of Obstetrics.

CHAPTER XXXVI.

THE OVARIES.

THE ovaries are situated upon each side of the uterus, to which they are attached by a strong fibrous ligament about one and a half inches in length, and they occupy the posterior part of the broad ligament just behind and a little below the Fallopian tubes.

When in their normal position they are slightly below the linea ilio-pectinea, and somewhat anterior to the sacro-iliac synchondrosis.

When their size and weight are somewhat increased by congestion they may vary from their normal locality by sinking lower down in the pelvis. The peritoneal membrane is reflected around them, and embraces the lower two-thirds of their substance, while the upper border stands out free in the peritoneal cavity and in contact with some of the fimbria of the Fallopian tube.

The entire organ is inclosed in its proper fibrous covering, the *tunica albuginia*, which is extremely dense and firm in structure and incloses a peculiar firm, spongy substance, or stroma, held together by delicate connective tissue, and abundantly supplied with bloodvessels.

In the meshes of this spongy stroma are numerous dark microscopic points, which by some are supposed to be the points around which the ovisacs are formed.

In each ovary of the adult woman may be seen several ovisacs of different dimensions, from the size of a pin's head to that of a pea. The main body of the stroma presents a delicate buff color when incised.

Method of Examining the Ovaries.

The ovaries are situated so deep in the pelvis as to make them seem to be inaccessible to every means of investigation. In very fleshy persons it is indeed difficult to reach them, but even in most of such patients we can gain valuable information by thorough and persevering effort, and in women of thin habit we can generally reach them with the finger. When it is remembered that there are very few of the diseases to which these organs are subject that do not increase their volume and weight, and that in displacements of the uterus they are frequently drawn down below their natural place, we shall not be at a loss to understand the possibility of generally procuring information by the right kind of an examination.

The most simple plan of examining them is to introduce the index and middle fingers as deeply into the vagina as possible, and direct them high up in the pelvis to the side and behind the uterus, while with the other hand above the pubis we press the pelvic contents down as low as we can. To do this in the most effective manner the patient should lie on her back across the bed, or on the operating-table, so that we may have the free use of both hands. If we do not reach the ovary in this way it is very proper in some cases to etherize the patient, and introduce the hand all but the thumb. We may thus explore the sides of the pelvis quite thoroughly, and, in favorable subjects, will seldom fail to find and get a pretty good idea of the state of the organ. The ovary is rather nearer to the anus than to the vaginal orifice, hence an exploration, with one, two, or more fingers in the rectum, may lead to definite results, with less inconvenience to the operator. It should be said, however, with reference to examinations per rectum, that they are both more painful and disgusting than those through the vagina, and should be resorted to only when we cannot succeed in getting the proper information by examination through the latter canal. In rectal explorations we may avail ourselves of the bimanual method, and the pressure above will be of more service than when examining per vaginam.

CHAPTER XXXVII.

AFFECTIONS OF THE OVARIES.

Congenital Atrophy.

THE ovaries, like the rest of the genital organs of woman, may be imperfectly developed. It is not unusual to meet with women whose whole sexual system is developed to a degree usually found to indicate the completion of childhood. The breasts are about the size and shape of the girl twelve years of age. She does not menstruate, and perhaps is not endowed with the sexual desires common to the sex; and if married, fails to bear children. The uterus, if examined, is found small, as are the clitoris labia and nympha. In all the instances of this kind that have come under my observation, the individuals were otherwise well developed. Not unfrequently, however, as shown by other observers, the whole person is deficient, never attaining to more than the stature of a child. Cases of the congenital atrophy of the ovaries are given in this work under the head of amenorrhœa, with the method of treating the condition. Senile atrophy of the ovaries needs no description in this place.

Hypertrophy.

Enlargement of the ovaries is probably occasionally due to an increase in size without other alteration of their tissues. This is hypertrophy. It is supposed to result from prolonged congestion, causing hypernutrition of the organ. The disease is hypothetical, as it has not been demonstrated.

More frequently the enlargement is caused by an increase of some of the natural tissues and by inflammatory effusions. This last enlargement is, of course, due to chronic inflammations. It is not easy, if at all practicable, to diagnosticate hypertrophy of the ovaries. We can generally detect enlargement of these bodies by physical examination, but cannot in all cases determine with certainty the nature of the enlargement.

Displacement.

Their intimate and firm ligamentous connection with the fundus of the uterus causes them to partake of the changes in the position of that part of the organ. Thus, when the fundus rises into the abdominal cavity during pregnancy, the ovaries are carried up with it, and in very thin persons they may sometimes be felt as small, movable, sensitive tumors upon the side of the uterus.

The same thing occurs in some cases when the uterus is much enlarged by a fibroid tumor. In the former condition the displacement is physiological, and does not ordinarily give rise to serious inconvenience, unless the organ is rendered unusually sensitive by disease. When the uterus is retroverted or retroflected, the ovaries are displaced to a greater or less extent downward and backward, and sometimes this displacement is so great that they may be felt in the posterior cul-de-sac and constitute a very annoying complication. In fact, this condition is of more consequence than the uterine displacement, and is a serious barrier to the correction of the malposition of the uterus, on account of their liability to be compressed by the instrument used to hold the uterus in place. But sometimes the ovaries fall into this position without the uterine deviation. When this is the case there are likely to be many grave symptoms, which are included in the vague and imperfectly understood term "ovarian irritation." In most cases of this nature the ovaries are the subject of some form of organic disease, and we may reasonably doubt whether the symptoms arise from the pre-existing disease any more than from the deviation from their normal position. There can be no doubt, however, that the displacement may greatly embarrass the circulation in them, and thus contribute still farther to their morbid condition. In such cases, the extensive reflex nervous influence exerted through the genito-spinal centres awakens a long chain of morbid phenomena destructive of the comfort of the patient, and sometimes establishes a series of oöphoro-neuroses that wrecks the patient mentally and physically.

Finally, I may say that rarely these organs may make their way out through the inguinal canal, in something of the same way that the testes do in the male. As there is no scrotum, however, in which they can find lodgment, they are arrested at the upper border of the pubis, and there constitute a harassing and painful hernia. This ovarian hernia may generally be diagnosed from the omental or intestinal hernia, from the facts, first, that these two latter seldom pass out through the inguinal ring in the female, though frequently through the femoral ring; second, that they are not particularly sensitive to the touch unless in a state of inflammation from strangulation, while the ovary is quite sensitive; and, third, that the sensitiveness of the ovary is said to be peculiar, resembling nothing so much as the sickening sensation experienced upon pressing the testicle, while the sensation of omental or intestinal hernia is rather the tenderness of inflammation.

Having referred to the different varieties of ovarian displacements, I desire now to confine myself to the pelvic deviations of position.

Symptoms.

What are the symptoms of pelvic displacements of the ovaries? Having already referred to them, I shall be brief in their further consideration.

They may be included under two heads, local and general. The local symptoms are not distinctive. They are pain, weight, or bearing-down sensation, sometimes heat in the pelvis, backache, sacral and coccygeal tenderness, and occasionally radiating neuralgia; there are also very frequently though not always, menstrual derangements, but these local symptoms may be produced by many of the disorders incident to most of the pelvic organs.

As to the general symptoms. They are quite numerous and varied. It is indeed questionable whether all of the hystero-neuroses should not be regarded as oöphoro-neuroses; that is, direct or indirect morbid emanations from the ovaries themselves. It is probably impossible for us to separate the general symptoms arising from disease of the pelvic viscera into uterine, ovarian, vaginal, and vulval, as the nerve-supply to these organs are essentially a unit, and for their nervous manifestations are subject to the same presiding centre.

In them is comprised a circle of functions to the perfection of which, soundness in all of the organs is essential. Whether the terrible nervous symptoms arising from certain diseases of the vulva, the vagina, or the uterus can be reflected upon the organization in any other way than through their connection with the ovaries is a question not yet solved. I think we cannot doubt, however, that to "ovarian irritation" may be attributed the whole array of reflex phenomena so frequently noticed in the wrecked condition of broken-down women.

In the retrouterine displacements of the ovaries, these conditions are prominent features, the numerous symptoms often assuming a very aggravated form, and the suffering of the patient becoming unendurable. The general symptoms are those of ovarian irritation, and this is to be expected, because the circulation and the innervation of these organs must necessarily be very much interfered with by their malposition.

The Diagnosis

Of these displacements is not generally very difficult. When in the inguinal canal, an examination of the tumor, its shape and peculiar sensitiveness are both characteristic, the only thing for which it may be mistaken is hernia of the omentum or intestine, and a tumor formed by the protrusion of either of these is more globular, less firm, and unless in a state of inflammation is not very sensitive. When in the *cul-de-sac* behind the uterus if not changed in shape by disease the ovary has the same outline as when naturally situated and is movable. We may reach it by passing one or two fingers deep into the vagina or rectum.

In many instances this displacement is associated with retroversion or retroflexion of the uterus, and is apparently the result of the malposition of that organ. In others, however, the ovaries fall behind the uterus, because of their enlargement and increased weight from structural disease. Possibly a relaxed condition of the fold in the broad ligament in which it is contained, may permit the ovary to settle down out of its natural position.

Are displacements of the ovaries always and necessarily accompanied by serious local symptoms or destructive general disturbances? I think not. Probably every gynæcologist of extensive observation has noticed instances, in which the ovaries could be felt in the *cul-de-sac*, and the patient experience little if any inconvenience, from such malposition. These, judging from my own observation, are not very uncommon cases.

Why should some patients suffer so much from these displacements while others experience so little inconvenience from them?

In answering this, I must employ a term that is not very definite, and perhaps not always intelligible, "nervous susceptibility." This nervous susceptibility with some patients, appears to be a part of their original construction or "make up" if you please, while with others it is an acquired condition.

Nervous susceptibility and neurasthenia, if not connected as cause and effect are at least very intimately associated, and to treat these cases successfully therefore, we must have in mind this item of nervous susceptibility or neurasthenia connection.

Prognosis.

When displacements give rise to symptoms of ovarian irritation, what is the prospect of relief?

Such cases are justly regarded as very unpromising, but not necessarily incurable.

Treatment.

The treatment of the symptoms attendant, and to some extent dependent upon displacements of the ovaries, is sometimes followed by most satisfactory results. By treating the symptoms, I do not mean the administration of medicines for the relief of nervous headache, hysterical convulsions, sleeplessness, etc., but the removal of those conditions from the system which encourage their manifestation.

Whatever may have been the diathesis of our immediate ancestors, whether they were effected by diseases resulting from hyperæmia or plethora or not, it is evident that we have fallen upon times when anæmia or hydræmia among women, is, to say the least, a very common state of the general system. This is especially the case with a large proportion of patients suffering from ovarian irritation, either with or without displacements of the ovaries, and the nerve centres in such people are habitually anæmic.

Nervous exhaustion means imperfect nutrition or lack of trophic energy in the nerve centres. This, I have no doubt, is mainly because there is not a sufficient amount of good, rich blood circulating through them.

I cannot understand how nervous exhaustion can take place when there is an unfailing supply of nutrition in these centres, but it is plain that an exhaustion of supply will render the regular working of the brain and spinal cord impossible. It is blood exhaustion then instead of nerve exhaustion.

What we want to do with these patients is to turn them entirely around in their habits, and lead them to the adoption of measures that will make them plenty of blood and fat. Dr. Weir Mitchell has taught us how to do this, and his system of managing patients of this character is admirable. It is not always practical nor indeed necessary to adopt his method as a whole. This, however, does not detract from its merits. Absolute rest is necessary only in cases of extreme prostration.

In most cases active exercise will be better than passive, and should always be enjoined upon the patient and attendants. The exercise in kind and quantity should be prescribed and enforced with exacting regularity, and urged by decision that will not fail.

The most important part of the treatment, however, is the regulation of food, by which I mean the prescription of it in items and quantity from day to day.

My routine prescription is three ounces of beefsteak for breakfast, with bread and butter, or toast, potatoes, and other vegetables, as the capacity for digestion will allow; six ounces of roast beef or mutton, bread and butter, potatoes, vegetables, etc., for dinner; for supper the same as for breakfast, and after each meal, and at bedtime, one pint of good fresh milk. The only limit I would place upon the amount of food of the kind I have indicated is the capacity of the stomach to retain it. If the food is not rejected by vomiting, or it does not irritate the bowels enough to cause diarrhœa, I would not allow the want of appetite nor the inconvenience that may arise during digestion to be considered as a reason for not taking it. Usually the stomach will soon become tolerant and, after a time, the enriched blood, circulating through its glandular apparatus, will engender a relish for food, and the patient will eat with pleasure. This intimation, that an anæmic stomach necessarily digests with difficulty, is intentional, for I do not believe that energetic innervation is possible without the supply of blood is sufficient to secure good digestion.

With this, or some other equivalent method of feeding the patient, there should be associated some plan by which she can get plenty of fresh air, and have as much exercise as she is able to take. The exercise may be passive at first, but as soon as it is possible it ought to be active.

Active exercise may be begun by having the patient walk, supported as much as necessary by a strong nurse, but as soon as she can walk alone the support should be withheld. Then it is not rest, but exercise, that should be advised in these cases. Of this I am fully convinced by experiments and unmistakable proofs in my own practice.

As long as nutrition can be supplied the patient will profit by exercise, but if nutrition is impossible then of course exercise is impossible also. Thus far I have said nothing about medicines to aid digestion or to increase nerve force, not because I have no faith in them, but because I believe them of secondary importance, mere adjuvants instead of principals in the treatment of this condition of the system.

I could cite a number of instances in which this course of management resulted in averting the dangers and mutilation of the more heroic treatment of castration by establishing a vigorous and tolerant condition of the nerve system, and thus curing ovarian irritation. These suggestions are applicable in other cases than displacements of the ovaries in which there is ovarian irritation.

As to the management of the displacement. In some few cases, when the ovaries are borne down by a displaced uterus, we may occasionally correct the displacement so far as to greatly improve the circulation of these organs, and thus remove a great element in ovarian distress. This, of course, is done by correcting the displacement of the uterus, by proper means of support, as a well-adjusted pessary.

In the cases, however, in which the symptoms are the most grave, —retroversion and retroflexion of the uterus,—the location of the ovaries in the *cul-de-sac* by the side of the fundus renders the satisfactory adjustment of the pessary almost impossible, as the instrument is pretty certain to cause pressure upon these sensitive organs, and thus become intolerant. We ought not to despair of accomplishing the object, however, until we have exhausted our ingenuity in mechanical appliances for this purpose.

When every other measure fails either to render the condition of the patient bearable, or save her from becoming a mental and physical wreck, we still have the resource furnished us by Dr. Battey, of Rome, Georgia, namely, the removal of these organs. In taking the consequences of this operation, however, we should remember that it is very dangerous, and that, if successful, it unsexes our patient in the sense that she is at least barren for all future time. When the ovaries are displaced so as to occupy the inguinal canal the operation for removing them is less hazardous than when in the pelvic cavity, and for that reason may be resorted to with less hesitation.

Ovaritis.

Acute inflammation of the ovaries, in connection with local peritonitis, or inflammation of the cellular tissue in the pelvis, is not an uncommon affection. As a simple, uncomplicated disease, it is conceded to be of infrequent occurrence. Post-mortem examinations reveal the existence of inflammation of the ovaries, as a complication of inflammation of the surrounding tissue, in all stages, from mere phlogistic hyperæmia to destructive suppuration. In such instances it is involved in the general mass of disease. This occurs after abortion, labor at full term, and even in the more puerperal condition, as the result of cold. As ovaritis in this connection is the disease causing no separate symptoms, and requiring no other treatment than is necessary for the cure of the inflammation accompanying it, all that is requisite to say upon the subject will be found under the head of *perimetritis.*

As the result of the infrequent occurrence of ovaritis in an uncomplicated state, our knowledge of it is very meagre, many experienced practitioners never having recognized it. The intense interest the profession now feel and manifest in diseases of women will soon lead to a clearer understanding of this subject.

The following case is the nearest approximation to *simple acute inflammation* of the ovaries ever observed by the author:

"January 5th, 1872, I was called to see Mrs. S., widow, aged thirty-five years. She is the mother of three children, the youngest of whom is eight years old. She had been attacked fourteen days before with pain in the hypogastric and iliac regions; chill, nausea, headache, and great nervous excitement. Fever succeeded the chill, and the nausea was sometimes accompanied by vomiting. The pain continued, and was aggravated by the erect or sitting posture. She was attended by a homœopathic practitioner, and after a few days improved until she was able to sit up a part of the time; but the pain, accompanied with tenderness upon pressure in the iliac region, continued in a subdued degree. Upon the 13th, about 10 P.M., after having exerted herself too much, she had another chill, with an aggravation of the symptoms. In the morning, when I was called, I found her vomiting, and unable to retain anything but cold water. She had headache, with pain and tenderness in both iliac regions. There was no tumefaction. The pulse was 110 to the minute; the tongue was coated white; the mouth dry, and other febrile symptoms usual in moderate attacks of acute inflammation were present. The attack had occurred at the time the menstrual flow was subsiding, and was attributed to exposure after being overheated and fatigued. At the time I saw her there was no discharge from the vagina; the passage of the urine gave her pain of a burning character, and she suffered pain also in passing the fæces. Upon examining per vaginam with the finger I could feel both ovaries prolapsed and tender. The uterus was prolapsed somewhat; also swollen and tender to the touch. Upon making pressure in the hypogastric region the patient complained of but little tenderness. Downward pressure in the iliac region caused more pain, and increased the sensations of tenderness in the pelvis. The ovaries, as felt through the vagina, were tender, movable, and appeared to be three times their natural volume. The patient complained of increased nausea when they were touched in the examination. I found no difficulty, by using the fore and middle fingers, in examining them thoroughly and recognizing their shape and size. The diagnosis was moderate inflammation of the uterus, with more acute inflammation of the ovaries. The patient informed me that she was not aware of being the subject of chronic inflammation of the uterus, as she had not previously suffered from pelvic pain or inconvenience, indicating chronic disease of any kind about the uterus or ovaries. There did not seem to be local peritonitis nor cellulitis, and but slight metritis. The bladder was irritable, and the vagina slightly tender.

" *Treatment.*

" Four grains of calomel were given, and succeeded in eight hours by a saline cathartic. Poultices were applied to the hypogastric region, and the patient ordered to keep quiet in the recumbent posture. The cathartics operated well, and relieved much of the pain and suffering. One-fourth of a grain of morphia enabled her to rest with some degree of comfort. When the pain returned the morphia was repeated, and thus continued when necessary for the pain. The bowels were kept soluble by the administration of a fluidounce of the saturated solution of citrate of magnesia. By continuing this course of treatment for six or seven days the inflammation was subdued, and convalescence was fairly established. In three or four weeks she was entirely well, and still remains so."

CHAPTER XXXVIII.

AFFECTIONS OF THE OVARIES CONTINUED—OVARIAN TUMORS.

Anatomy.

In the proper ovarian tumors, we may trace three coats or layers of tissue forming their walls. The external is the serous or peritoneal. It is shining and smooth as this membrane is elsewhere, and seldom changed in any way, except it may be thickened and hypertrophied. It can be traced into the peritoneal covering of the viscera and abdominal parietes, and consequently needs no elaborate description. The internal coat or lining membrane is doubtless the membrana granulosa of the ovisac, very much hypertrophied. When small, something like epithelium seems to be its entire composition. As it grows and develops, the epithelial arrangement is less perfect, until, when very large, we can observe it only in patches. In many cases when thus large, this membrane has a smooth, lustrous appearance, but in others it is more or less thickly studded with granular projections, varying from almost imperceptible minuteness to the size of peas, or even larger. Regarding the main sac as an hypertrophied ovisac, I think these little granular sacs (for they prove to be sacs upon examination) are also of the same nature and are the origin of the numerous endogenous or supplementary growths which constitute one of the polycystic varieties.

The middle coat is made up from the stroma of the ovary. Its strength depends upon quite a considerable amount of fibres, which enter into its composition. As the tumor develops, these fibres are enlarged, and apparently, if not really, increased in numbers, until they constitute the most of the thickness of the walls, and in some parts make quite a thickness, density, and toughness of tissue. These qualities are greater in old large sacs than in the smaller and younger ones. At the pedicle, and for some distance up the sides, they are greater than in other portions, being in these parts sometimes a quarter of an inch thick, while at the fundus or distal portion they may be thin and fragile. The whole of this coat may be very tough and thick, so as to resist great force, or it may be thin throughout, so as to be easily ruptured at almost any point. Entangled in the meshes of these fibres may be discovered, in many cases, the minute microscopic points so numerously scattered through the substance of the ovaria. These points are believed to be the origin of the germinal spot in the ovum by some physiologists, and around which are developed the ovum, and progressively the whole ovisacs and their contents; and I believe that their presence in the walls of the tumors, over much, if not the whole, of their extent, accounts for the development of the minute granular internal projections above described. In a tumor recently removed from the body, by holding it up to the light, we may not unfrequently discover the peculiar buffy tinge seen in the stroma. The vessels are situated in this coat. They are numerous and some of them large, so large that great care is necessary to prevent them from bleeding when the peduncle is divided. They are developed, it is hardly necessary to say, to this great size from the minute twigs which penetrate the substance of the ovary.

The shape of ovarian tumors may vary much. They may be regularly globular, polyglobular, angular, or irregular in almost every way. When small, the ovary may be seen as constituting a considerable portion of the tumor. When large, the ovary may be almost lost in the walls, or observed as a mere tubercle sticking to or imbedded in its side. Generally but one ovary is the seat of disease, but in rare instances both are affected. Ovarian tumors divide themselves anatomically into monocystic and polycystic,—the one having a single cystic cavity, the other several. The polycystic variety is formed by the development of several cysts adjoining or by the side of each other, and independently attached to or springing from each other on the external surface, or within the cavity of one large one. The instances of polycysts growing by the side of each other, and being independently attached, resembles at first the single. At an early stage of development they may stand free of contact one with the other, but as they grow in size, in consequence of the small surface of the ovary to which they are attached, they crowd together, so that it is not always easy to say whether they were not developed from each other. The cysts from which smaller ones grow are called proliferous. They are doubtless single for some time in their early development, but carrying up, as they increase in size, the proper substance of the ovary, with its rudimentary ovisacs, after awhile the inner or outer surface is bulged by the maturity of these last, which, if they do not dehisce and allow the escape of the ovum, grow into a subordinate tumor. This process is separate until there is a glomeration of cysts to quite a number, from four to fifty, of various sizes, from the size of a man's head down to that of a pin's head. Small ones may be so numerous as to stud a large part of the inner surface with granulated elevations. This is the most frequent variety met with in practice. When the minor sacs grow from the inner surface of a large cyst, the tumor is denominated olygocystic.

There is a great difference in the sensible qualities of the contents of the cysts in different cases, and of the different cysts in the same case. In some it is very thin, in others very thick and tenacious, while the color shades from black, inky, to limpid clearness. Not unfrequently large fibroid growths are observed in the ovary at the base of a single or multiple cystic tumor. These solid fibroid or fibrous growths may be simple or benign in their nature, or malignant. This complication of ovarian dropsy I think more frequent in persons advanced in years—over forty—than younger ones. The contained fluid of the polycystic tumor is ordinarily highly albuminous, of high specific gravity, tenacious, and more or less colored. The fluid is so thick sometimes as not to flow through a canula. Occasionally we meet with sacs which contain blood; more frequently serum colored with blood; in others pus, or serum and pus. From one tumor of several cysts, I drew pus from one cyst; dark coffee-grounds sanguineo-serous fluid from another; a beautiful straw color from another; and lastly, from another, fluid of a delicate azure tint. After tapping, more or less alteration is observed in the fluid, each operation withdrawing fluid affected by chemical or pathological circumstances. In the former, putridity or acridity; in the latter, the purulent productions of inflammation.

There are some chemical and microscopic resemblances in the fluid from almost all varieties of ovarian tumor. Albumen in some of its forms is always present. In some specimens of fluid, strong acids, or heat, causes it to assume a solid form, coagulating and adhering like the white of an egg when cooked in boiling water; in others a small precipitate is all that is observed. Between these extremes all shades of difference exist. The reaction is alkaline. Mr. Nunn says that, "As the results of many examinations (microscopic) of different specimens of ovarian fluid, the most constant characteristic of such fluid is its containing, in greater or less abundance, cells gorged with granules; and, in addition, circumambient granules, having the same measurement, encompassed by the cell. The size of the gorged cells and included granules varies greatly, even in fluid from different cysts in the same ovary." This description of fluid could, with certainty, remain good of the first evacuation only, as pus and blood-globules are not unfrequently found in subsequent evacuations.

The fibrous or solid variety of ovarian tumors is occasionally met with. Dr. Bogue, about ten years since, removed a solid tumor of the ovary at the Cook County Hospital, which weighed forty ounces. It was very dense and fibrous in structure.

The very remarkable tumor called dermoid is so seldom met with and so little is said of them in the textbooks that I feel justified in copying somewhat at length from my article on dermoid ovarian tumors, in the third volume of the *Transactions of the American Gynæcological Society:*

CASE I.—In the spring of 1874, the patient, a girl, eighteen years of age, noticed an enlargement in the left iliac region, which finally became so great that in October, 1875, she was distressed from the distension. At this time she was tapped and about ten quarts of fluid evacuated. The physical nature of the fluid was somewhat tenacious, of a clear, slightly bluish tinge, and contained the ovarian cell. The outline of the tumor could be traced quite easily after the tapping. It occupied the whole width of the abdomen between the two iliac fossæ and extended upwards to within two inches of the umbilicus. It was globular and of soft consistence.

After this operation the tumor filled quite rapidly, and on January 1st, 1876, the patient was as large as before the fluid was evacuated.

On January 4th, ovariotomy was performed. There were no adhesions or other source of embarrassment to the removal of the tumor, and the patient made a good recovery.

The sac was thin but firm, and presented the peculiarly pearly aspect of the ordinary ovarian tumor. When the large Wells's trocar was introduced nothing but serum flowed through the tube. Upon being opened the tumor was found to contain about half a pound of sebaceous fat. The inner surface was smooth, except a small part about the size of the palm of the hand situated at the bottom near the pedicle. Here the surface was depressed at least an inch below the level of the inner surface, and, although not sacculated, had a well-defined and pursy margin. The bottom of this depression was covered with dermic tissue, and upon it grew an abundant crop of dark-brown hair about an inch long. It was very fine, and firmly attached. Doubtless the dermic patch was the source of the fatty material found floating in the cyst which on cooling assumed the consistence and appearance of yellow butter. Upon closer inspection of the smooth lining of the larger part of the tumor it was found to be studded with very minute papillæ, such as we sometimes see in oligocystic ovarian tumors.

This specimen I regard as not a true dermoid cyst, but as a complex dermo-ovarian tumor, a tumor originating in a Graaffian follicle in which a tegumentary element had been inclosed. It contained no bone or teeth such as are often found in the true dermoid tumor, but did contain undoubted colloid fluid, diluted with the watery product from the sweat glands of the dermic membrane upon which the hair was implanted.

Case II.—Mrs. P., aged forty-three years, the mother of one child eighteen years old, became aware of an enlargement of the abdomen about ten months before the operation, which was performed June 28th, 1876. During that time she grew to the size of pregnancy at full term. The tumor filled the abdominal cavity and extended to the ensiform cartilage. There was no difficulty in deciding that it was monocystic and contained a thin fluid. The operation was not attended with difficulty in any respect. There were no adhesions, and after evacuation the sac passed through an incision only three inches long. The patient experienced considerable depression from the shock of the operation. This, however, lasted but a few hours, no other disagreeable symptoms supervening. The recovery was rapid. The care of the case after the operation was undertaken by Dr. S. W. Green, of Marengo, Illinois.

The cyst was single, thin, and uniform, except at the part opposite the pedicle, where its wall was about half an inch thick and contained a thick layer of adipose tissue. Upon the inner surface of this part was a thick tegumentary covering, upon which was implanted a dense mass of blonde hair, matted together, and nearly the size of an orange. The whole of the inner surface of the sac elsewhere was smooth and of a buff color. The external surface was of a pearly hue and smooth. There was no evidence of bony or dental tissue. The fluid was quite thin, of a slightly blue tinge, and floating in it in considerable masses were ten to twelve ounces of yellow sebaceous fat. The hairs when straightened out measured from six to fifteen inches in length.

This example I regard as a simple dermoid cyst of the ovary, there being no sign of follicular papillæ upon the inner surface, and the fluid not being in the least tenacious or colloid in appearance; moreover I was unable to find in it the ovarian cell. I think the fluid was the product of the sweat glands in the dermic structure at the bottom of the cyst.

Case III.—Mrs. P., a small Jewess, thirty-one years of age, the mother of four children, the youngest being three years old, noticed about nine months before the operation—which was performed April 7th, 1875—that the abdomen had commenced enlarging. The tumor was found to be monocystic and so completely filling the abdomen that the patient had great inconvenience from distension.

The removal of this tumor, which originated in the left ovary, was easy, as no adhesion or other obstacles were encountered. The patient recovered without experiencing any untoward symptoms.

The tumor was composed of a single cyst, of which the wall was thin over about three-fourths of its circumference and easily ruptured. At the bottom or pedicular portion, involving about one-fourth of the inner surface, was a dense mass of areolar tissue literally filled with pieces of bone. The greater number of these pieces were cylindrical, from half an inch to two inches in length, and varying from an eighth to a quarter of an inch in thickness. They seemed to be imbedded in loose cellular tissue, were not attached to each other, and were easily removed by the finger. Other masses of bone, made up of alveolæ, were not unlike the maxillary processes, and varied in length from one to two inches, and in width from one-third to one-half inch. They resembled honeycomb, and were quite firmly attached to the cyst wall. The microscope showed their structure to be that of true bony tissue. This mass was covered by a tegumentary membrane to which was attached more than a hundred imperfect incisor teeth, distributed over the whole surface, their adhesions being so slight that they could easily be scraped from the surface with the finger. These dental bodies were all about the same size and consisted merely of the crown; but the enamel and dentine seemed perfect. They had no connection whatever with the bony tissue. Interspersed among these teeth was a dense crop of blonde hair, averaging an inch in length.

The fluid, of which there was about ten quarts, sp. gr. 1008, was clear, with a slight bluish tinge, and entirely devoid of tenacity or other colloid properties. I believed it to be perspiratory serum. There were also several ounces of yellow sebaceous fatty matter within the cyst.

I should class this tumor among the true dermoid cysts of the ovary, and believe that it possessed none of the properties of the ordinary ovarian tumor. Its structure was much more complex than that of the two preceding tumors, but much less so than that to which I shall now call attention.

CASE IV.—Mrs. B., thirty-five years of age, the mother of four children, the last twenty months old, first noticed a tumor in the right iliac region nine years before the operation. It was then about the size of her fist. It had grown steadily but slowly until June 19th, 1878, when it was extirpated. The growth did not seem to be influenced by pregnancy. She had borne three children from the time when the tumor was discovered to the time of its removal. Her health had been feeble for several years, but from the birth of her last child she had been confined to bed half of each day, and, for several weeks, all the time. The main inconvenience was from the weight and mobility of the tumor. When she was in the erect posture it caused dysuria and rectal tenesmus; when lying on either side it pressed upon the subjacent viscera and also dragged upon the upper side; the only comfortable position was the dorsal. The pulse and temperature were decidedly and continuously above the normal standard. She was sleepless, had a very poor appetite, and was rapidly becoming emaciated. The above very brief history was given me by the attending physician, Dr. J. H. Low, of Brimfield, Illinois.

The appearance of the abdomen was very singular. It was considerably distended; from its centre, including in fact the whole umbilical region, arose a round projection exactly resembling a ventral hernia, the umbilicus occupying its apex. It measured five inches in diameter, and protruded three and a half inches above the common level. It was fluctuating and dull upon percussion. On each side I could easily distinguish two other, apparently larger, cysts not projecting above the surface. Percussion over these elicited no resonance, but it was easy to detect fluctuation. The tumor could be moved pretty freely in all directions without traction upon any part of the abdominal walls. By external and internal manipulation I could trace the attachment of the mass to the right side of the pelvis and assure myself that it was not of uterine origin. It was clear that I had to deal with a tumor made up, principally at least, of three cysts, and quite certainly originating in the right ovary, but it presented so many unusual symptoms and appearances, that further diagnostic measures were necessary before I would venture to remove it. After making preparations for its extirpation, the patient being fully etherized, I introduced a small trochar into the prominent cyst. A little sebaceous fat flowed through the canula, and at once made the diagnosis complete. The usual small incision exposed the pearly cyst and allowed me to evacuate the prominent sac of one quart of thin, yellow fat. The other two cysts were drawn to the opening, and their contents, of a similar character, evacuated. By this time the rubber blanket was smeared with a sticky grease, the instruments had become slippery, and my fingers were encumbered with a mass of fat which had to be removed before I could proceed with the operation. The cysts were drawn through an incision about three inches long, and a short, slender pedicle, consisting of the right ovarian ligament, part of the broad ligament, and Fallopian tube, was brought up into the wounds, ligated, cut, and dropped into the pelvic cavity. The left ovary was healthy. As nothing had been allowed to pass into the peritoneal cavity the incision was then closed. It will have been seen by this description that no adhesions or other impediment hindered or complicated the operation. It was remarkable how extremely greasy everything employed in the operation became, and I had more trouble in cleansing the instruments from the grease than is usually experienced in getting rid of the blood and mucoid fluid of the common ovarian tumor. The patient had no untoward symptoms, seeming to me more like one recovering from the exhaustion and irritation in which I had found her than from the hazardous operation for the removal of an ovarian tumor.

Before describing the tumor I wish to call attention to the fact that there was no serum evacuated during the operation; no fluid but the soft fat was observed. The tumor proved to be a remarkable specimen of the true dermoid variety, nothing in its contents seeming to be of ovarian origin. The cyst wall was thin, but of firm structure, and divided into three compartments of about equal dimensions. The septa were complete, and of the same consistence and density as the external wall. At the base of the tumor the sac was more dense and firm than elsewhere. The peculiar formations contained in each cyst were so nearly alike that a description of the contents of one will suffice for each of the other two.

On opening the cysts each was found to contain a mass of matted hair, the size of a lemon, thoroughly supplied with the same fatty substance that had been evacuated from the tumor. One of these rolls of hair was red, another blonde, and the other gray. The patient's hair was dark brown. Some of this hair was twenty inches long, and it was all attached to tegumentary substance closely resembling the scalp. The dermic structure, which was about four inches across, rested upon a very uneven layer of adipose tissue an inch thick. By the side of the dermic patch, and not covered by it, was a loose layer of areolar tissue, an inch and a half thick, containing bones in a great variety of shapes,—scales, round bones an inch or more in length, alveolar nodules, etc. Upon the surface of this part of the tumor in each cyst was a half-arch of teeth the shape of one-half the superior maxilla. In one cyst the crowns of the teeth projected above the surface, while in the other two they were thinly covered by tissue so soft that it could be pinched off by the thumb and finger. The teeth were not attached to the subjacent bones, but were simply imbedded in the loose mass. The teeth in each segment very perfectly represented, respectively, an incisor and three molars, each having three well-marked fangs. One of the molars in each row strongly resembled the wisdom tooth. The perfection of their formation will be recognized in the specimens which I submit for your examination. The crown with the enamel and eminences, the main body, and roots are as distinctly marked as if they had been removed from alveolar cavities.

Before leaving the description of the tumors and their removal, I would call your attention to the great simplicity of the operation and the fortunate recovery of all the patients, no adhesions or other complications having existed.

Now what is a dermoid tumor? This name is given to a cyst formed anywhere in the body, the internal or lining membrane of which is in part or wholly tegumentary in structure. As now understood, the presence of this condition alone would justify this nomenclature. The formation seems to be no less an error of structure than location. Lebert, Paget, Virchow, and most other modern pathologists agree that the dermic tissue thus located is essentially the same in structure as true skin. The products are all the same, hair, sebaceous fat, and perspiratory fluid. In many of these tumors we find subcutaneous adipose tissue very perfectly formed. Less constantly, teeth, bone, muscular, nervous, and even brain tissues. These latter, except the teeth, in some instances, are found either beneath the dermic membrane or beneath the portion of the internal surface not lined by this cutaneous substance.

My experience shows that the dermic tissue and its products characterize one variety of these formations, as in Cases II and III. These constituents are sometimes found alone, and may then be regarded as indicative of a more simple formation, while the addition of bone, muscle, etc., constitute a more complex order of tumor represented by Case IV. The bone and muscle, however, are never found in a tumor of this kind without the dermic membrane, its essential glands, and their products. Another thing quite apparent is that the skin and its appendages are not only constantly present, but comparatively perfect in their organization. The teeth, which are very closely associated in embryonic metamorphosis with the formation of the skin, stand next; many being quite perfect in their structure. The bony, muscular, and nervous structures, although complete in their texture and formation, are never developed into complete organs. I am aware that cases have been recorded,—as for instance by Blumbach and Rokitansky,—that would seem to be at variance with this assertion; but the bones in these cases lacked the completeness in structure necessary to entitle them to be classified with any of the bones in the human skeleton. When some or all of these structures, together with the products of the dermic tissue, constitute all the contents of the cyst, the specimen should be regarded as a simple dermic tumor, even when formed in the ovary, the fact of its having found a lodgment in that organ being an accidental rather than a necessary condition. When, however, it exists in the ovary, and with these substances there is found the colloid or mucoid fluid characteristic of the ordinary ovarian tumor, it is not merely a dermoid, but an ovarian dermoid tumor. It is a mixed neoplasm, a morbid development of the ovarian follicles in connection with the congenital dermoid. In my first case this was the character of the tumor; and instances of this kind are recorded in the well-known books of Drs. Atlee, Peaslee, and Mr. Wells. The first variety, then, although often found in the ovary, differs in no essential particular from those found elsewhere, except in magnitude, and perhaps greater perfection of organized development. Possibly this last difference does not exist.

When found in the ovary, either in the single or mixed form, the investing membrane seems to be the same in appearance and structure as in ordinary ovarian tumors; and, when first exposed, it is often not easy, if at all possible, to distinguish between them until some of their contents are evacuated.

To the more fluid products of the first variety of simple dermoid cysts, especially the secretion from the dermic tissue, such as the serous or perspiratory fluid, we must attribute the difference in the size of this form of tumor. The sebaceous product is also sometimes quite bulky, as seen in Case IV; but when the sudoriparous glands are numerous and active, the amount of watery fluid is sometimes enormous, and consequently the tumor grows to be very large, as may be specially noted in the second case. In such instances, from causes which are not appreciated, the sudoriparous glands seem suddenly to acquire great functional activity, and by pouring into the tumor a large supply of fluid make it grow with great rapidity.

As there was no appreciable amount of serum in Case IV, the sac being filled with the sebaceous matter, it is easily understood why the tumor was a long time in attaining the dimensions it finally acquired. The solid contents of these tumors, as far as I can learn, do not grow to a sufficient extent to give them any great bulk, and consequently, when situated in the ovary, such a tumor, apart from its fluid contents, would hardly require extirpation.

The compound variety, or ovarian dermoid, would be likely to grow to a great size in consequence of the accumulation of the colloid secretion, just as they would if the dermoid element did not exist. By consulting the literature of the subject, I am led to the conclusion that the dermoid and colloid contents of these compound cysts are usually contained in different compartments of the tumor. This was notably the case in some of Mr. Wells's specimens.

There are one or two facts which may have some bearing upon the production and development of these tumors: The dermic membrane is always superficial with reference to the inner surface of the tumor; the hair always, and the teeth often, grow from its surface; while the bone and other tissues are situated below it, but not always immediately under it. In my fourth specimen the bone was imbedded in a mass of cellular substance by the side of the cutaneous layer, giving me the idea that it belonged to a blastodermic formation deeper than the tegumentary portion of the surface.

The question here naturally presents itself: Whether the simpler forms of these dermoid cysts, in which the dermoid structure, with hair, fat, and serum are found without any of the deeper tissues, are tumors in the process of development into the more complicated variety? I think not, and believe that each tumor receives during its embryonic state all the elements of formation it is capable of producing; that the trophic qualities imparted to it then definitely limit its possibilities. If so, it necessarily follows that the tumor, containing all the variety of structure ever found in them, should manifest these qualities and structures without gradation of growth, and possess from the beginning the complex qualities found in advanced periods of life.

Theories of their Origin.

The theories devised to explain the origin and development of ovarian dermoid tumors represent, with some degree of exactness, the physiology of the times in which they originated. In the earlier ages of medicine, physiology was the creature of imagination. Definite knowledge of the internal organs was wholly wanting; if possible, even less was known of their functions. Pathology also rested upon the same unsubstantial basis. As a consequence, the theories of the origin and development of these curious growths were all vague and imaginary. In the latest and most plausible explanation yet offered, we have the results of the present highly cultivated science of physiology; and if not absolutely true, there can be fewer rational and scientific objections opposed to it than to any of its predecessors.

It is not my present purpose to do more than give a very cursory view of some of the most prominent theories which have at different ages been presented to, and accepted by, a large portion of the profession at the time they were promulgated. I will classify the theories under three divisions: I. Those originating in the imagination alone without any scientific foundation. II. Those which have for their basis the superstitions of the times in which they originated, and of the people by whom they were entertained. III. The scientific theories.

I. The most ancient of the imaginative theories is, I believe, attributed to Aristotle. It taught that the dermoid products of these tumors—as the hair, teeth, etc.—had been swallowed and transmitted in some unknown manner to the localities occupied by them. This idea is a good match for many of the ingenious vagaries of that wise man.

Belief in virginal pregnancy supplied the basis of another and extensively prevalent theory. It assumed several forms. One was the abstract possibility of a virgin becoming impregnated without sexual intercourse, or true parthogenesis. Another was that the ovaries possessed properties that enabled them to produce, to a limited extent, the organized bodies resembling the parts of a fœtus; or, again, that certain unsatisfied sexual longings of an isolated woman might stimulate the ovaries to imperfect generative processes.

Still another was that *certain individuals* possessed a sort of ovario-cystic diathesis which took this direction.

It is easy to see that these vagaries—for they ought not to be dignified by the term theories—had no physiological basis and could be the products of imagination alone.

II. The superstition of mediæval times gave rise to the theory that these tumors were visitations of Providence upon the subjects of them on account of particular sins. The infliction of this punishment upon males as well as females showed Providence to be no respecter of persons. One man had a pregnancy in the thigh because he laughed at his wife in her suffering during labor. It is said that the products of these tumors were sometimes baptized in the hope of avoiding the perdition in which they would be involved without such a ceremony. Hence, it seemed that the priests believed in their own invention, and that the theory was not a mere trick with which they tried to practice upon the credulity and ignorance of the people.

III. As the knowledge of physiology advanced somewhat among the profession, the theories became more rational, and the possibility of natural causes was employed to explain the occurrence of these singular tumors.

They were regarded by many as ovarian pregnancy, in which the formation of the fœtus was imperfect, or, after having undergone development, the fœtus had become disintegrated, and the skin, bones, and teeth being more difficult of destruction, had withstood decomposition and remained in the sac. Another theory accounted for their peculiarities by supposing that the ovum had become blighted after having been developed to a certain extent.

Some one else has propagated the doctrine of inclusion, or of a *fœtus in fœtu*, believing that somehow one ovum had become engulphed in the organization of the other, and on account of the nature of its nidus could not attain to complete organization or development.

Still later, plastic heterology and heterotopy were supposed to afford a more rational explanation of their production. According to this theory, the origin of these tumors in any part of the body is no more wonderful than the growth of other forms of heterologous tumors in the same localities.

In the light of the patient physiological research of our own day, and especially from the revelations of the microscope, a theory of these curious tumors has been developed, which I regard by far the most satisfactory and scientific.

This theory is based upon a supposition which is at least physiologically plausible. It may be stated thus:

In the early period of ovulation or embryonic development, by some accident or imperfection of formation, an indentation of the blastoderm is produced. In the wonderful trophic energy of that period the minute depression is inclosed by the approximation of its blastodermic margin and becomes an isolated cavity, and the growth and perfection of the embryo are accomplished notwithstanding this early accident to the integrity of its envelope. The depression thus formed involves, perhaps, all the layers of the blastodermic membrane, but the external layer becomes the lining membrane of the cavity, and is completely cut off from the rest of the blastodermic surface and invaginated with all its essential structures and processes of organization; all its products, therefore, must be retained in the cavity. The contents of this cavity correspond in miniature with what the formation might have been if the displacement had not occurred. In the further development of the embryo the portion of the blastoderm covering this adventitious cavity develops its tissues and organs in the ordinary way, and thus incloses it in the body by the structures usually found to cover it. The internal layer of the blastoderm is doubtless also displaced, but it is not isolated, and consequently its products are never found inside the tumor. Therefore, in instances where the dermoid patch occupies any of the mucous cavities, the neoplasm will always be found external to the mucous membrane. This theory serves to explain why these hairy tumors are found in the fœtus, child, virgin, matron, or male, and with equal plausibility why they may exist in any part of the body.

Dr. Pauly, in an excellent paper in the *American Journal of Obstetrics*, expresses a doubt whether they exist more frequently in the ovary than elsewhere, notwithstanding the generally received opinion that this is the case, and at present it cannot be asserted that they are not as common in the male as in the female. This theory would certainly not furnish us with reasons for their occurrence more frequently in woman than in man.

If nothing unusual happens the adventitious sac grows with the individual in whom it is situated, and perhaps attains maturity as the same character of organs mature elsewhere. The sac itself continues to increase in size, because of the constant secretion of the glands of the dermic structure. Growth from this cause would probably be slow if the activity of the tegumentary glands were not preternaturally quickened by morbific causes. When situated in the ovary, however, the conditions naturally calculated to impart an impetus, exclusive of what is termed pathological states, exist. Hence in them they grow more rapidly and larger than in other places or organs. The fluctuation of nerve force, circulatory supply, and nutritional conditions which take place in the ovaries in consequence of the processes of menstruation, sexual excitement, and the varied states of generation, disturb the states of these otherwise nearly stationary neoplasms.

These reasons would lead us to expect the dermoids situated in the ovaries to become large and to grow more rapidly than in any other organ or locality. When situated in these bodies their progress is usually tardy until the age of puberty is reached. At this time the tumor is likely to be influenced by the increased nervous and vascular activity assumed by the ovary, and thenceforward they manifestly possess all the conditions necessary to cause copious dermic secretions. In the ovaries, also, their growth is more likely to be influenced by the *morbid* impressions to which these organs are more frequently subjected than almost any other part or organ of the body. They are also doubtless especially stimulated by the occurrence of the conditions which give rise to the colloid tumors. For in connection with this form of tumor they are generally found to have assumed great proportions.

The condition imparted to dermoid tumors by the ovaries would almost necessarily lead to their discovery during the lifetime of the patient, and thus favor the idea that they are more frequently located in these organs. Situated in organs of more unvarying functions they would be likely to remain dormant, and never attain dimensions that would cause them to be discovered; consequently they are overlooked in the general statistics on the subject.

After ovarian tumors have been developed to a certain extent they become subject to diseases and accidents, and thus play an important part in the sanitary conditions of patients in whom they exist. Inflammation attacks them, and causes ulceration in their walls so as even to perforate them, making a communication between the cavities of contiguous cysts, or with the peritoneal cavity. Without perforating the walls of the tumor, the ulceration may produce a good deal of pus, which is mingled with the other contents of the cyst in which it occurs. General inflammation of its walls may proceed to a fatally exhaustive extent, or spread to the peritoneum, and thus indirectly cause death. Gangrene may also result, which may be confined to the cavity of some of the cysts, and induce a putrid, offensive state of the contents, or perforate the dividing partitions, and thus make a communication between cysts, or open them into the peritoneal cavity. The walls may also rupture from distension in consequence of their becoming attenuated, or as the effect of a violent stroke or fall, or other shock, and the contents escape into the peritoneal cavity. By means of ulcerative communication with the Fallopian tubes the fluid sometimes escapes. Adhesion to the walls of the abdomen from inflammation and ulceration through the parts thus agglomerated sometimes results, and the fluid so discharged. Inflammation also causes adhesion at various parts. The fibrin effused glues it to the surrounding parts,—the abdominal walls, the intestinal canal, bladder, and other viscera. Slight inflammation is supposed to increase the effusion in their cavities, and cause them to grow very rapidly. Inflammation, also, sometimes, no doubt, causes obliteration of the cavity from adhesion of the walls. This is more frequently the case when it results from external causes, as blows, tapping, pressure, injection, etc. Now, it hardly ever happens that these diseased conditions and accidents of the tumors fail to produce their effects upon the health of the patient. No doubt but that death occurs from extensive disease in the sac, without any organ being directly involved. A large production of pus would exhaust the patient; gangrene, to a large extent, would cause death, as extensive gangrene of unimportant organs generally does. But an extension of disease to the peritoneum and surrounding viscera, or by the effusion of the acrid contents of a diseased cyst, is more likely to be the mode of progress to constitutional disturbances inaugurated by inflammation in the tumors.

When the tumor bursts, and its contents are effused into the peritoneal cavity, the peritoneum seldom escapes without inflammation; but the degree will depend upon the nature of its contents. If they are not vitiated, but consist of the bland albuminous fluid found there ordinarily, it is very slight indeed, and lasts for a very short time only. But should pus, or the ichor of decomposition, be mingled with it, we should be prepared to expect serious if not fatal results.

I once had an opportunity of observing the progress of a case for several months, where this rupture and effusion were frequently repeated. About every three weeks the woman would attain to a large size, and a well-defined large cyst could be felt filling up the whole abdomen and distending it greatly, when suddenly, without premonition or apparent cause, the cyst would give way, the swelling would become more diffuse, fluctuation more obvious, and the cyst could be no longer defined by the touch; slight fever and some tenderness of the abdomen would last for two or three days, when copious perspiration and diuresis would evacuate the fluid in a few days more. After this process was completed, the abdomen would be lank, and a small cyst could be felt rising up from the left ilium; it would increase and burst at the end of three weeks, as the other had done before. I saw the patient frequently while this process was repeated six or seven times, when, as she would not submit to the operative procedure which I insisted upon, I was dismissed, and an irregular practitioner, who was sure he could cure her, installed in my place. Not long (perhaps three months) after I was discharged she died from the inflammation resulting from one of these effusions, probably because the contents of the cyst had become vitiated by inflammation.

But these growths may produce a pathological condition of the system without becoming themselves the seat of disease, by the great size they may attain mechanically interfering with the functions of the pelvic and abdominal viscera. Before rising out of the pelvis it may displace the uterus, and cause inconvenience from this effect; it may press upon and obstruct the rectum, bladder, and urethra, or upon the iliac veins, causing obstruction to the flow of blood, and varicose veins in the legs, phlebitis or phlegmasia dolens; or, pressing upon the nerves, cause neuralgic pains in the limbs, hips, etc. It is plain that such pathological effects, when induced, would be serious, in proportion with the greater or less impaction in the pelvis by its continued growth. Ordinarily, these inconveniences do not prove very embarrassing to the functions of the important vital organs, but sometimes the case is far otherwise, and life is very much shortened and health rendered miserable. As it rises into the abdomen, these mechanical troubles are apt to be lessened; and as the room is comparatively so great in that cavity, quite a while elapses before any great disturbance results from mechanical pressure. After awhile, however, the abdominal muscles are distended beyond convenient size, and the tumor is strongly pressed among the viscera. The kidneys, liver, stomach, intestinal tube, in fact, all the abdominal organs, may become the subject of great and even fatal pressure. In many instances, however, enormous size is attained before fatal damage results. One hundred and fifty pints of fluid have been taken at a single tapping. A much less amount, in most cases, would produce very grave results by pressure. When the growth is rapid, its mechanical effects will be more distressing; and, on the contrary, the organs accommodate themselves to a great deal more pressure if gradually brought about.

Besides the inflammatory changes that take place in the tumor, chronic degeneration is occasionally observed. Deposits of earthy substances in the walls, bony spiculæ, etc., are the most frequent. Small tumors, containing solid material, are more commonly thus affected.

The modes of termination are worthy of some consideration. Many cases, in consequence of a low grade of vitality, last through a great many years without materially influencing the general health, and up to the death of the patient, at an advanced age, when large, prove to be nothing more than an inconvenient burden, and when small not the cause of even this kind of trouble. Others, in consequence of their bounteous vascular supply and energetic vitality, bring about fatal conditions of the abdominal organs in a few months. Spontaneously favorable terminations are so rare that we can base no calculation upon them. Perhaps rupture of the sac into the peritoneal cavity, collapse, and adhesion of its walls, is the most common and favorable spontaneous termination. After the rupture, in cases where cure follows, it is probable that the opening in the sac continues, and as a permanent fistula from the cyst into the peritoneum, places the fluid in contact with a more active absorbing surface, until, by the elasticity of its walls, it contracts to annihilation, or, at the first shock of the rupture, inflammation is originated that causes an obliteration of the cavity of the sac. Dr. Simpson speaks of instances of evacuation through the vagina. The same thing might occur in connection with the bladder or alimentary canal. I have already spoken of adhesion to and rupture through the walls of the abdomen, and consequent recovery. Inflammation in its proper tissues, no doubt, sometimes arrests the development of and obliterates the tumor without materially affecting the patient's general health. It is not improbable that other circumstances with which we are not acquainted may likewise operate to cause the arrest and cure of them, inasmuch as they unquestionably do sometimes disappear in an unaccountable manner.

The local pressure interfering with the functions of the bladder and rectum may induce complicating diseases that lead to death, and consequently cause death before the tumor is very largely developed. Inflammation will spread upon these organs to their more vital connections and relative organs; or, by interfering with excretion from the bowels or bladder, produce disease of the blood, and thus gradually undermine the health of the patient.

After the tumor has ascended into and greatly distended the abdominal cavity, pressure upon the viscera will sometimes produce disastrous terminations. The stomach is crowded into a very small space, food can be taken but sparingly, and is often rejected before digestion is completed. The vascular supply of this organ is cramped, and its secretions vitiated and embarrassed, and in this way digestion is interfered with, the appetite destroyed, and loathing of food takes its place.

Pressure upon the vena porta embarrasses the secretion of the liver.

Pressure upon the ductus choledochus, gall-bladder, and duodenum stops the excretion of bile; it is dammed back upon the gland, absorbed, and thrown into the blood to poison the nervous centres.

There is no doubt, also, that the general compression of the organs, by pressure upon the chyle absorbents, prevents that fluid from passing as freely as usual into the blood, and thus by degrees starves the patient. But probably no more disastrous effects of the pressure of the tumor in the abdomen is noticed than such as is produced through the kidneys. Pressure upon the emulgent veins causes congestion of the kidney, retention of urea and other matters that should be excreted, and drains off the albumen with the urine, until the blood becomes thinned enough to infiltrate into the cellular tissue in the form of œdema of the extremities, or into the peritoneal cavity, giving rise to ascites. But this is not the worst mischief, perhaps, caused by the pressure on the kidneys. The poisoning of the blood with urea, and its effect on the nerves and vital organs, is too well known to require more than mere mention to suggest the rapidly fatal tendencies which result from it.

Inflammation in any of the important abdominal organs may be caused by the pressure, which will terminate fatally in a greater or less time, owing to its acuteness or slowness of progress. It will be seen by the above that ovarian disease usually terminates by inducing a long train of distressing constitutional symptoms. They are not uniform, some persons suffering from one mode of complication and some from another; but nearly all are pretty sure to experience those terrible sufferings which are connected with secondary disturbances in the vital organs.

The presence of the tumor, when not large enough to press upon the organs sufficiently to do very much damage, sometimes leads to copious dropsical effusion in the peritoneal cavity. This is, at least sometimes, the result of an influence exerted upon the peritoneum, causing it to secrete more than an ordinary amount of serum.

One case upon which I operated and evacuated a large amount of serum from the peritoneal sac recovered completely from the operation, but died about two months after from extreme abdominal distension, in spite of alteratives and diuretics.

Causes.

It is extremely doubtful whether there is anything in the general condition of the patients that predisposes to the development of ovarian tumors. There is quite a disposition, however, with certain authors, as will be apparent to any careful reader, to trace most chronic enlargements to scrofulous taint in the system; and these gentlemen express the belief that scrofula predisposes to ovarian disease. I think we may very safely conclude that in the function of menstruation we have a predisposing cause of ovarian disease. It is true that ovarian tumors have been found in the ovaria of infants and fœtuses, and very aged females; but this probably is as rare an exception to the general rule—that they occur during menstrual life—as the occurrence of menstruation in infancy and old age. Some circumstances connected with menstrual life appear also to increase the predisposition. Sixty-one per cent., according to Dr. West, of the patients were married, while only twenty-nine had never been married. After making allowances for the greater proportion of women at twenty-five who are married, I think we may fairly infer that marriage adds somewhat to the chances of the occurrence of ovarian dropsy.

That patients who are the subjects of this disease should be less likely to have children than those in whom ovulation is more perfect and complete, will not, I think, justify us in setting down sterility as the cause of it in any way, but it is more probably connected as an effect. During menstrual life the most obnoxious time is between the ages of twenty-five and forty, the time when the sexual functions are exercised with more activity than any other.

Unhealthy menstruation seems to be more commonly coincident with it than healthy. Abortions and premature labor are so likewise.

We should attach sufficient importance to the fact that it occurs in unmarried persons as often as twenty-nine per cent. This induces Dr. West to remark, that "it occurs in the unmarried oftener than any other organic disease of the sexual organs."

The exciting or proximate causes are such as excite the ovaria and induce abortive efforts at ovulation. What does so we are not able to say with certainty.

Inflammation of a low grade, and somewhat chronic duration, might cause induration or thickening of the indusium, so that it would not yield to the upheaving pressure of the ovisac and permit dehiscence.

The probabilities, I think, are in favor of this mode of merging a healthy into an unhealthy accumulation. When once thus commenced, the stimulus of increased incretion of fluid would carry on a kind of hypertrophy in the involucra that would permit of a further enlargement. Now the local circumstances that are regarded as the causes of the disease would favor the occurrence of inflammation, and are very frequently attended with some of the symptoms of it. The ovary and uterus, during each menstrual period, are often attended with pain in the ovarian region of just such a character as we would expect to indicate inflammation. This ovarian pain is present in other excited conditions of the sexual organs also, thus showing that they are often the focus of painful vascular turgescence, if not inflammation. While inflammation is probably the cause of the beginning of the development of ovarian tumors, it does not seem necessary to their continued development, as the accumulation of fluid in a shut cavity, with a secreting internal surface, is a matter of course, and the limit of its amount, for the most part, does not depend upon anything but the capacity of the involucra to grow, until interrupted by external circumstances.

Although inflammation may, in most cases, be the cause of the toughness of the covering to the ovary, which prevents the escape of the ovum, this condition may result from some other local circumstance. Congenital formation may be such as to permit the involucra to increase as fast as the demand for more room becomes necessary.

Prognosis.

Our knowledge with regard to the prognosis is unfortunately too definite. There is no need of much conjecture with reference to this matter; the termination is too frequently demonstrated. In arriving at prognosis with reference to any disease, we ought to consider whether its ordinary course is, after a time, to a termination in health, as is the case with many diseases, or, there being no such favorable tendency, what are the probabilities of a cure. Unfortunately, there is almost no tendency to spontaneous recovery in ovarian dropsy; probably not two per cent. but would, after a longer or shorter time, terminate in the death of the patient. While this is the case, it does not properly represent the value of a life threatened by this affection. Some patients live a great many years in comparative comfort; but, by large odds, the case is generally very different,—only a few years being sufficient to finish the course in a downward direction. The average duration of life is about three years from the time it is first perceived.

We should carefully examine every individual case with reference to its own peculiarities, its nature, and the character and condition of the patient. Is the disease simple, or a compound of cyst and solid, polycystic or monocystic? The monocystic is very much more favorable for treatment, and terminates in spontaneous recovery oftener than the polycystic. The duration of life is greater, also, in the monocystic. If several years have elapsed since the patient was aware of the presence of the tumor, it will probably continue to increase slowly, unless, as is sometimes the case, more activity has lately been observed, so that a tumor that had formerly grown very slowly, and required a number of years to acquire half its size, has grown the rest in a few months. In this last, there is every probability of a rapidly fatal course. Again, if the patient has not known any increase of size until within a few months past, and yet is quite large, the prognosis is bad. Our prognosis is influenced by age to a considerable extent; occurring in young persons, it is more likely to advance rapidly than in old ones. A woman at forty is not apt to develop an ovarian dropsy so rapidly as one at from sixteen to twenty.

Ovarian dropsy will advance less rapidly after menstruation ceases than before, and the earlier in menstrual life the more rapidly it will advance. The prognosis, as a general thing, therefore, is worse in the young than the old. If we should decide the question by age how long will she live, we should speak more favorably to the woman advanced in years.

The inflammation, the pressure upon the rectum, bladder, stomach, bowels, and, above all, the kidneys, the nervous system, the vascular system, nutrition, as shown by the signs of emaciation or otherwise, should all be carefully scrutinized.

Diagnosis.

The diagnosis of ovarian tumors, when tolerably large, and not complicated with more than ordinarily embarrassing circumstances, is not difficult; but instances do occur where the matter is far otherwise, and a positive opinion cannot, with propriety, be given.

General Remarks on Diagnosis of Ovarian Tumors Generally.

The history will afford us in many cases, however, very valuable aid in arriving at correct conclusions. It is now pretty well determined that the average duration is about three years. In this time it will spontaneously produce fatal effects, by great size and extreme distension, and the resulting damage. This is longer than pregnancy lasts, and a shorter time than is required for solid fibrous growths to reach the same results. The age at which they are most likely to occur is an average of twenty-six years, according to Mr. Brown, although they may occur at any time during the active condition of the sexual functions, while the ovaria are subject to menstrual congestions and their effects. Quite a large number of cases make their first appearance in early menstrual life. I knew one in which the beginning of the tumor must have been simultaneous with, if not antecedent to, the commencement of the function of menstruation. Fibrous growths of the uterus are not likely to begin so soon. Their increase after being first observed is comparatively rapid, more so in the young than those somewhat advanced in age. They are not usually attended with pain in their own proper substance; this is not always true, for the congestion and hyperexcitement may be attended with pain and soreness. The functional disturbance, in their early stages, occurs in the pelvic viscera; first, on account of pressure, such as tenesmus, dysuria, dragging, or weight in the pelvis; and secondly, imperfect menstruation. Sometimes the menses are suppressed, scanty, and painful, but often no deviation is observed. The main thing in the history of the case, in this respect, is to remember that the symptoms point in the beginning to trouble in the pelvis. It is generally, or at least sometimes, stated that the tumor rises from one iliac region and continues to occupy one side for some time. This, I think, is the exception to the rule, and, by Dr. Frederick Bird, is considered an evidence of adhesion. When large enough to overcome the support of their peritoneal envelope, they fall into the cul-de-sac of Douglas, and, as they grow, come up in front of the promontory of the sacrum, until large enough to be felt above the pubis, having their point of support in the hollow of the sacrum, instead of one of the iliac fossæ. The patient will usually speak of it as a lump, instead of saying that she is swollen, as in pregnancy. She has watched it coming up out of the pelvis, and not starting from above or from one side, and encroaching upon the abdomen from either of those directions.

The knowledge derived by physical examination is the most valuable; and while the modes of procedure are the same, and applicable to all stages of growth and enlargements of the tumor, we will be able better to describe and understand them, as made use of for one that has arisen from the pelvis, and pretty thoroughly filled the abdominal cavity,—a tumor that has become obvious, and from which our patient is solicitous of being relieved.

The means afforded us for physical examination are: 1st, palpation; 2d, percussion; 3d, auscultation; 4th, vaginal and rectal digital examination; 5th, examination with the sound or uterine probe. These may be used separately, or combined in any given case; some being more valuable in some cases, and others in different ones. Exploring needles, chemical tests, and the microscope may also be used to great advantage. Palpation is of very little use while the tumor is still in the pelvis, except in conjunction with the vaginal touch or the uterine probe; as it rises in the abdomen, however, this process of examination comes into use independently. In this condition we can examine the consistence, size, shape, and mobility of the growth, and form some opinion as to its adhesion to the walls of the abdomen, and its primary attachments.

In the ordinary condition of the contents of the abdomen the intestines lie in contact with the anterior and lateral walls, except in the right and left hypochondria, where the liver, over a considerable space, and the spleen, a smaller, displace them. In consequence of this state of things, the resonance caused by the gas in the alimentary tube extends all over the anterior and lateral walls, save the above exceptions. Dulness upon percussion, therefore, indicates the presence of a tumor. The mesenteric attachments between the posterior wall of the abdomen and intestinal tube prevent them from being separated to any considerable extent; hence tumors occupying much space are apt to displace and get anterior to the latter. If the tumor springs from the pelvis this is particularly the case, as well from the above facts as the direction given to it by the axis of the superior strait; thus it is with the gravid uterus, uterine fibrous growths, and ovarian enlargements. Growths from the pelvis, perhaps, more completely gain the anterior position than any other sort, unless it be such as are attached to the anterior wall originally. It may be observed, too, that it takes a larger growth to disengage itself from intestinal resonance when arising from the posterior wall than from any other situation in that cavity.

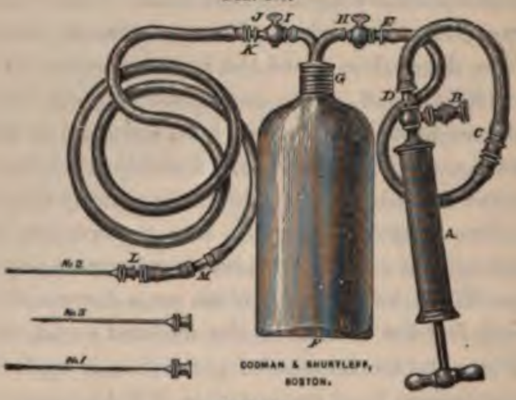
By percussion we may make out the boundaries, positions, and, to some extent, attachment and contents of an abdominal tumor. We should begin at the pubis, and follow a line upward to the ensiform cartilage; by so doing we will ascertain the central perpendicular extent. A good plan is to make four or five perpendicular explorations of this kind each side of the median line, extending the whole length of the abdominal cavity. After this has been done we may proceed, by right angles to these lines, to examine the abdomen crosswise, from its lower to its upper boundary. We will seldom miss any important growth by this mode of proceeding. If there is any doubt or obscurity, pressure in connection with percussion should be sufficient to bring out something of the flatness of sound from the spine, kidneys, etc. If we discover any point of sufficiently defined dulness to impress us with the idea of a tumor, we should, by percussing explorations, proceed from the point of greatest dulness to its circumference in every direction. In this way of examining, we will be able to trace it up the side to the hypochondriac regions down into the pelvis, or define it so perfectly as to decide what must be its place of origin. Another valuable method of employing palpation is to place one hand on each side of the abdomen, and press them strongly toward each other. If there is a tumor its resistance to their approximation will demonstrate its presence. Percussion and palpation will often enable us to determine the contents of a tumor as to its solidity or fluidity. Placing the finger on one side of the tumor, while we percuss the other, if the contents are wholly fluid, a wave of liquid will be set in motion on the side struck, and traverse the space to the one of the opposite; if solid, of course nothing of this kind will take place, and the impulse will be given to the whole substance of the growth. Should the contents be fluid, separated by a number of partitions, the wave or fluctuation will be less distinct than in the one where no such division exists; but in fact the obscurity is so great that we will be at a loss by this management to decide whether the contents are solid or fluid. A slight variation of this combination of tact and percussion will often clear it up, however. When we wish to ascertain whether the fluid is contained in several cysts, we should place the pulp of the fingers of the left hand in the centre of the tumor, and then percuss with those of the right, first very near, then gradually increase the distance between them, until we find a point at which the fluctuation becomes less distinct; this is the margin of the cyst over which our left fingers are placed. Still keeping them in position, we percuss around in every direction, until we have made out the boundary and size of the cyst under examination, when we may move the fixed fingers to its margin, and commence the same process around this point. Proceeding in this way from one point in the abdomen to another, in most instances we may trace the outline of all the cysts superficially situated, and thus enumerate them, and learn their relation and absolute size. If solid bodies, of whatever structure, are incorporated in the mass and superficially situated, they may be detected with their relative position, size, etc.

After tapping, when the abdomen is lessened, its walls lax and soft, palpation, and percussion, singly or combined, become more demonstrative than before this operation. It not unfrequently is necessary, on account of the sensitiveness of the patient, when the tumor is small, and the abdominal muscles not much under control of the will, to administer chloroform until unconsciousness is induced, and the influence should often be so profound as to abolish reflex sensibility. Palpation and percussion should both be practiced ordinarily with the patient in the recumbent position on the back, with knees drawn up, shoulders elevated, and the abdomen stripped quite bare of covering; in many instances, however, variation of posture is indispensable to definite results,—the standing, prone, etc. Very little need be said in this place about auscultation, as it is only applicable to the diagnosis between it and pregnancy, and will be dwelt upon when I come to speak of that more particularly. Vaginal and rectal digital examinations in ovarian disease are proper, and should not be dispensed with. The pelvis should be carefully surveyed by this method. The attachments, consistence, and relations of the diseased mass to the various organs in this cavity should be carefully noted. The uterus, rectum, and bladder, so far as practicable, ought to be examined with reference to their healthy condition, position, and involvement. Combined with external palpation, we may examine the tumor more thoroughly than with either one alone. Two fingers introduced into the vagina, and pressed firmly upward against it, will perceive any impulse imparted to the tumor above. With the left hand, if we press downward toward the pelvis, we may feel the motion of the diseased accumulation downward, and, if the sudden impulse of percussion is applied above, we may feel an impression from its contents; if fluid, a wave or sense of fluctuation; if solid, the deadened impulse always given in such cases. When the tumor is small, and occupies the posterior peritoneal cul-de-sac, by introducing one finger in the rectum, and the other into the vagina, the tumor may be included between them, and thus examined with more accuracy than with either alone.

Dr. Simpson has taught us how to extend our examinations into the uterus, so that our information in this direction is very materially increased by the use of the probe mounted upon a handle. Members of the profession who appreciate the labors of Dr. Simpson have, by consent, named the instrument, the improvements and uses of which he has so ably promulgated, "Simpson's sound."

The sound may be introduced into the uterus, and varied in its direction, while we gently urge it forward to the extremity of the uterine cavity. The only obstacle a sound of the proper size will meet with in a uterus of ordinary size arises from want of correspondence with the direction of the cavity. The most simple and ready revelation of the sound or probe is the direction and length of the uterine cavity. From this knowledge much valuable deduction may be drawn. But it is employed for determining the relation of the uterus to pelvic tumors, according to the ingenious directions of Dr. Simpson, very handily and to excellent purpose. While the sound is in the cavity of the uterus, this organ may be fixed by holding the instrument firmly in one position, or be moved in any direction, if not restrained by adhesion or accretional attachment to the diseased mass, or to some other organ. If the uterus be fixed, and the tumor moved by its side or from it, with the fingers introduced for the purpose, the motion will be felt affecting the uterus through the attachments. On the other hand, if we watch the motion of the tumor with the fingers while the uterus is moved, the attachment or not will be determined, or the uterus may be moved in one direction and the tumor in another. In this way their attachments may be pretty certainly diagnosticated. The sound may be employed in the uterus with one hand, while palpation on the abdominal surface is effected with the other; and, if the uterus reaches above the pubis, the distance the probe is separated from the external hand, or its relation with the median line of the abdomen, or the main bulk of the growth, will enable us to determine some interesting problems. The motion received by the sound from the pressure of the hand without, or *vice versâ*, is of important significance, as will be more apparent as we advance.

FIG. 158.



Aspirator.

When, from all these sources of inquiry, we fail to get a sufficiently definite answer, there is still another physical means of diagnosis which we are justified in employing, viz., exploration. By means of an exploring needle, or aspirator, we can draw off a small quantity of fluid; it may be subjected to microscopic and chemical tests that will often enable us to determine the nature of the disease.

Dr. J. Hughes Bennett, in a paper on "Ovarian Disease," in the *Edinburgh Medical and Surgical Journal*, quoted by Mr. Brown, says, as the result of his microscopic "examinations of different specimens of ovarian fluid, that the most constant characteristic of such fluid is its containing, in greater or less abundance, cells gorged with granules; and, in addition, circumambient granules, having the same measurement as those encompassed by the cell-wall. At one time I considered the size of these granules (if they can properly be so called) was constant, but subsequent observations have convinced me of the incorrectness of this conclusion; the size of the gorged cells and granules varies greatly, even in the fluids from different cysts of the same ovary." There can be no question but that the nature of the fluid contained in these cysts is, in all its essential features, pretty constantly the same in the early stages of progress; but it is equally true that, as they grow large enough to be influenced by pressure or other external causes, their microscopic composition must vary.

Although my opportunities for microscopic examination of ovarian fluid have been quite limited as compared to others, I cannot but express a decided belief in the conclusion arrived at by Dr. J. M. Drysdale.

I have never found the ovarian cell described by Drysdale in any but ovarian fluid; nor have I failed to find it in specimens that I knew to be fluid from an ovarian tumor. It is but fair to say, however, so many of the best gynæcologists doubt the accuracy of his conclusions, that the question is far from being settled.

The fluid drawn from the tumor is generally turbid and discolored, often chocolate color. When felt between the thumb and finger is sticky, and sometimes very tenacious and ropy.

The granular cell revealed by the microscope, according to Drysdale, is best exhibited in contrast with other pathological products contained in the sac, as given in the plate and description on pages 458–59 of *Ovarian Tumors*, by Dr. W. L. Atlee.

"*On the Granular Cell found in Ovarian Fluid.*

"On placing a drop of the fluid removed from an ovarian cyst under the microscope, we usually find a number of granular cells, E, some free granular matter, C, and small oil-globules, B; and frequently, in addition to these, epithelial cells of various forms, A, and crystals of cholesterin, D. These, together with blood-corpuscles, F, the inflammatory globules of Gluge, I, the pus-cell, G H, and disintegrated blood and other cells, may all be sometimes seen floating in either a clear or a turbid fluid.

"To find them all present in one specimen, however, is rare; more commonly we can discover but three or four of them in the fluid. *But no matter what other cells may be present or absent, the cell which is almost invariably found in these fluids is the granular cell.*

"This granular cell, E, in ovarian fluid is generally round, but sometimes a little oval in form, is very delicate, transparent, and contains a number of fine granules, but no nucleus. The granules have a clear, well-defined outline. These cells differ greatly in size, but the structure is always the same. They may be seen as small as the one five-thousandth of an inch in diameter, and from this to the one two-thousandth of an inch. In some instances I have found them much larger, but the size most commonly met with is about that of a pus-cell.*

"The addition of acetic acid causes the granules to become more distinct, while the cell becomes more transparent. When ether is added, the granules become nearly transparent, but the appearance of the cell is not changed.

"This granular cell may be distinguished from the pus-cell, lymph-corpuscle, white blood-cell, and other cells which resemble them, both by the appearance of the cell and by its behavior with acetic acid.

"The pus and other cells, G, which have just been named, have often a distinctly granular appearance; but the granules are not so clearly defined as in the granular cell found in ovarian disease, owing to the partial opacity of these cells; and, when the granular cell of ovarian disease and the pus-cell are placed together under the microscope, this difference is very apparent. In addition to the opacity of these cells, we frequently find their cell-wall appearing wrinkled rather than granular; and further, in the fresh state, they are often seen to contain a body resembling a nucleus.

"But if there is doubt as to the nature of the cell, the addition of acetic acid dispels it; for if it is a pus-cell, or any of the cells named above, it will, on adding this acid, be seen to increase in size, become very transparent, and nuclei, varying in number from one to four, will become visible. (See G, pus-cell, before adding acid; and H, pus-cell, after adding acid.) Should the cell, however, be an ovarian granular cell, the addition of this acid will merely increase its transparency and show the granules more distinctly.

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* "By comparing the drawing of the ovarian cell which accompanies this paper with one given in Dr. Atlee's work on Ovarian Tumors, it will be seen that I have omitted the three large dark cells which form the left of the group representing the ovarian cell in that drawing, and which are inaccurate.

"The compound granular cell, I, the granule-cell of Paget and others, or inflammation-corpuscle of Gluge, is also occasionally present in these fluids, and might possibly be mistaken for the ovarian granular cell; but it is not difficult to distinguish them from each other. Gluge's cell is usually much larger and more opaque than the ovarian cell, and has the appearance of an aggregation of minute oil-globules, sometimes inclosed in a cell-wall, and at others deficient in this respect. The granules are coarser, and vary in size, while the granules of the ovarian cell are more uniform and very small. By comparing them in the drawing, these differences will be apparent. Again, the behavior of these cells on the addition of ether will at once decide the question; for while the ovarian granular cell remains nearly unaffected by it, or, at most, has its granules made paler, the cell of Gluge loses its granular appearance, and sometimes entirely disappears through the solution of its contents by the ether.

"That the discovery of a granular cell in ovarian fluid is new I do not assert, as J. Hughes Bennett and other writers have described granular cells which they have seen in these fluids; but, with one exception, their description does not correspond with the *ovarian granular cell.* Bennett, for instance (*Ed. Med. and Surg. Journ.*, vol. lxv, p. 280, 1846), states that the granular cell which he saw exhibited a distinct nucleus on the addition of acetic acid, which is not the case with this. Other writers have described the cells which they found as pus and pyoid cells, and yet others confound them with the compound granular cell or inflammation globules. The exception referred to above is found in Beale's description of the microscopic appearance of ovarian fluid.* He observes:

"'The cells are composed of at least two distinct forms: 1. Small, delicate, transparent, and faintly granular cells, without the slightest appearance of a nucleus, some being somewhat larger, and others smaller, than a pus-corpuscle. 2. Large cells, often as much as the thousandth of an inch in diameter, but varying in size, of a dark color by transmitted, and white by reflected light. These, which have been termed

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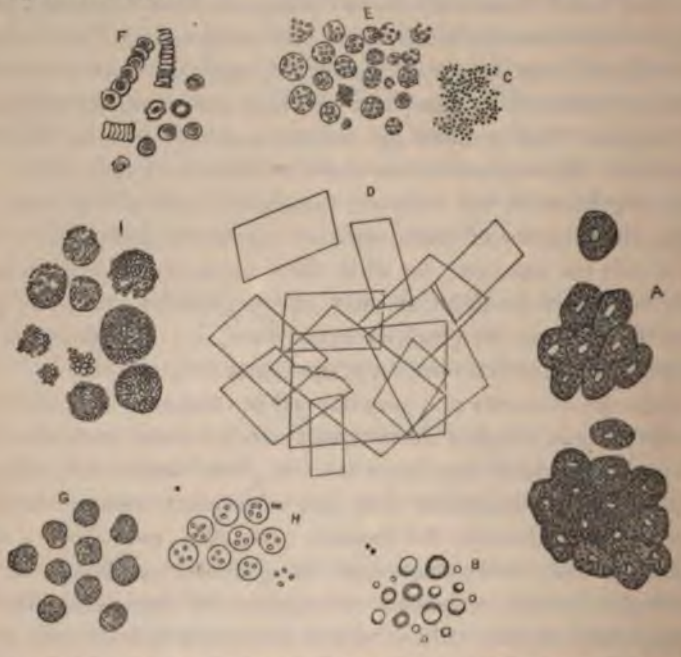
* The Microscope in its Application to Practical Medicine. By Lionel S. Beale, M.B., F.R.S., etc. 3d edit., p. 179.

"granular-corpuscles," "compound granular cells," "inflammation globules," etc., are aggregations of minute oil-globules in a cell form.' "

"It will be seen by this extract that Beale distinguishes these 'small, delicate, transparent, and faintly granular cells' from the compound granule-cells or corpuscles of Gluge. The description which he gives of the first cell, with the exception of the cell being *faintly* granular, corresponds very closely with that of the ovarian cell, but it is incomplete, and no test is given to distinguish this from other granular cells."*



I do not think he mentions with as much distinctness and emphasis as it deserves the abundant, free, granular matter floating about in connection with the cells. In my observations this granular material, having the precise appearance of the granules in the cells, was the most striking of the microscopic appearances.

The chemical nature of this fluid is more constant. It is alkaline in reaction and highly albuminous, always coagulating when boiled or submitted to the action of strong acids.

After having passed in review, as above, the items of general diagnosis of ovarian tumors, I propose to enter upon a differential view of the subject, for there are conditions of disease and health of the contents of the female pelvis and abdomen which they may be mistaken for. The following long list of conditions may be given as likely to be mistaken for ovarian tumor: "1st. Retroversion and retroflexion. 2d. Tumors of the uterus,—solid, fibrous, or fibrocystic. 3d. Pregnancy. 4th. Pregnancy complicating ovarian dropsy. 5th. Cystic tumors of the abdomen. 6th. Distended bladder. 7th. Accumulation of gas in the intestines. 8th. Accumulation of fæces in the intestines. 9th. Enlargement of the liver, spleen, or kidneys, or tumors connected with the viscera. 10th. Recto-vaginal hernia and displacement of the ovary. 11th. Pelvic abscess. 12th. Retention of menstrual fluid from imperforate hymen or closure of the os uteri. 13th. Hydrometra. 14th. Accumulation of fat in the abdominal walls. 15th. Accretions in the subperitoneal connective tissue, or in the peritoneal cavity.

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* Thomas M. Drysdale, M.D., Philadelphia, in the Transactions of the American Medical Association, 1873.

In cases of retroversion or retroflexion, if minute examination with the finger per vaginam and rectum fail, and the symptoms are of a character to make a correct diagnosis important, the uterine probe will at once determine the distinction. In some instances we might be quite unable to distinguish a small ovarian tumor from an impregnated retroverted uterus. Our proper plan in such cases is to await the peremptory demand for the knowledge, and then take the risk of introducing the probe, remembering the position of the mouth of the womb in retroversion, that it is not only near the pubis, but directed upwards as well as forwards, and that the os, in cases of misplacement by the tumor, is not directed upward, but nearly always downward,—certainly never, so far as my experience and reading goes, above the horizontal position. The probe will be equally available in examining the retroflected organ, and I think the probe should always be used where pregnancy is not suspected. Should we feel much doubt of the existence of pregnancy in connection with retroversion, it would be better to lift the tumor out of the pelvis; when, if it were retroversion, the uterus would be restored to its natural position, with the os near the centre of the pelvis. In endeavoring to distinguish between ovarian and uterine tumors, we should bear in mind that the latter almost invariably change the length and size of the cavity of the uterus. Where the sound is used, it will pass further than if the uterus was not involved. The rationale of this increase of size of the uterus, so generally found to be present, is connected with the fact that the development of a tumor in or from the walls of that organ induces general hypertrophy to some extent, as these growths are found to be a hypertrophy of some one of the uterine tissues. The tissues generally involved are the fibrous or mucous, as in hard or soft polypi from the internal, or hard from the external walls, or intramural fibrous tumors. Uterine tumors are so intimately connected with the uterus that this organ cannot be moved without imparting more or less motion to the tumor, nor can the tumor, on the other hand, be moved without, in a similar way, affecting that organ. This is not the case with ovarian tumors. They are so loosely connected with the womb that considerable motion is allowable without the other partaking of it. In the sound we have the means of moving or fixing the uterus, and with the finger may watch the effect of motion upon the one or the other, as the case may be. When a fibro-cystic tumor is developed upon the uterus, containing fluid, the examination to ascertain whether there is an attachment with the uterus, and with a view to learn the length of the cavity, will give us clear notions of the matter. When we are satisfied that pregnancy cannot be the condition, we may explore or tap it as an additional means of accuracy.

Hard or fluid tumors arising from a distant organ or part of the abdomen would have a different history from the ovarian tumor. If our patient is intelligent, her observation as to the place where first noticed should be relied upon as valuable knowledge respecting the probable point of origin.

Ascites, when excessive, may sometimes be mistaken for ovarian tumor, but the latter is more frequently taken for the former. When the patient lies on her back, with the knees drawn up, so as much as possible to relax the muscles, and the abdomen is entirely exposed, in ascites the tumidity will be rotund, filling out in every direction, and will particularly bulge the depending portions. The flanks will both be full; the abdominal protrusion commences at the edges of the ribs, and will be equally soft at every point; fluctuation will be greatest at the most dependent parts, and resonance entirely absent; fluctuation will scarcely be perceptible in the highest part of the abdomen, but there will be resonance there. These circumstances will remain the same under any change of position. If the patient stand up the dulness is in the hypogastric and iliac regions. If she lie on her side, the dulness and fluctuation on the lower side; resonance on the upper side. All this results from the water freely settling into the lowest points, let them be what they may. In ovarian tumor, alteration of position from erect to recumbent, or from supine to prone, makes no difference in the places where resonance and fluctuation are found. They are manifested always in the same places. When the patient lies on the back, the flanks are resonant, the umbilical region dull. Fluctuation is not observed in the flank in any position; it is apt to be greatest under any posture in the middle of the abdomen. When the abdomen is exposed for inspection there is marked irregularity in its rotundity, and I think, ordinarily, the flanks, one or both, are flat. One side is apt to bulge more than the other. Probably there is more than one rather prominent region,—it may be several. There is more hardness and tension; not the flabby swaying under slight influences, so common in ascites. An important class of circumstances is the pathological condition almost always present in ascites. It seldom occurs in persons in the enjoyment of good health in every other respect. There is organic disease of the kidneys, liver, spleen, heart, lungs, or subacute peritonitis. Or there may be some cachexia from miasma, poison, or other bad influence of particular places of residence, occupation, habits, or time of life, etc. There is some notable and grave pathological accompaniment of abdominal dropsy which precedes the swelling; whereas, the ill-health in ovarian dropsy is the effect and not the cause. We generally find that women preserve a good condition of health in ovarian disease until far advanced, and disordered functions come almost always as the result of great pressure upon the suffering organ. A complication of ascites with ovarian dropsy obscures our diagnosis very much. If the ascites is great, and the ovarian disease not so considerable, the tumor will be felt floating about, as it were, in the abundant fluid, when the patient changes position. Excluding by our diagnostic examination every other disease, and leaving the question between them alone, we are justified in exploration and tapping. By the former, we come in possession of a specimen fluid, which, when submitted to chemical and microscopical investigation, is almost conclusive. By the latter, we partially empty the abdominal cavity and relax the walls, so that we can examine its contents with great freedom. If the fluid is ovarian, it will be highly albuminous, and possess the microscopical qualities I have before mentioned. If it be ascitic, the properties are those of serum found exuded anywhere from pressure or inflammation. There will be very little, if any, albumen, no epithelial cells, and the corpuscles described by Drysdale.

It will occur very seldom that the question between pregnancy and ovarian disease will become so urgent that it may not safely be left to time. I can conceive no time or circumstance under which great doubt as to which of these two conditions were present but in the early stages of either, while in the pelvic cavity; and unless great pressure on the organs contained in it make delay hazardous, we should not interfere, but content ourselves to wait until the obvious evidences, as quickening and motions of the child, declare the existence of pregnancy, or until so much time has elapsed without any such signs as to throw great doubt upon the subject. At such times the tumor is high above the pelvis, and may be subjected to any searching examination we may choose. Auscultation then becomes valuable and perfectly reliable, when properly practiced, in determining the presence of normal pregnancy.

Frequent examinations with the stethoscope or ear, in various positions, should be patiently and perseveringly practiced before we should be satisfied to risk means of a hazardous nature that will enable us positively to decide the question. After having repeatedly thus explored the abdomen without any sign of a live fœtus, we may use the probe to examine the whereabouts and size of the uterus. No mistake will survive the test of this instrument. If I were not to explain myself a little more upon this point, I might incur the charge of rashness for recommending the sound where any doubts exist. It would be rash to use the sound until all the differential signs of pregnancy had failed, and even then, unless the urgent demand caused by the influence upon the health forbids us to wait longer for a decision. It is only in extreme cases, where the symptoms and signs derived from the breasts, condition of the cervix, menstruation, nausea, pigmentary deposits, and auscultation, had all failed, and yet I was obliged to act at once for the safety of the patient, that I should consent to use the sound. Then I would use it as the more innocent of the demonstrative tests, and as a *dernier ressort.* It is certainly more innocent than the exploring needle or the evacuating trocar, and equally demonstrative. The worst effects its careful use could have would be to produce abortion or premature birth, either of which would be more likely to remove the urgency of the symptoms than do harm. I have recently seen an instance of the obscurity of diagnosis, from the existence of a pregnancy of eight and a half months' duration, decided by the probe, which caused the discharge of a mummified fœtus of less than four months' growth, and, as a matter of course, almost cured the patient.

Pregnancy complicated with ovarian dropsy, may be very perplexing to diagnosticate. Mistakes of diagnosis have occurred in the hands of Sims, Wells, the author, and others. A careful examination of the cervix uteri, the abdomen, breasts, etc., for the evidence of pregnancy above mentioned, will seldom fail to make a diagnosis of this complication clear. There are very few collections or growths that can be, in such conditions, mistaken for this.

In pelvic abscess, there will be inflammatory tenderness and heat. The most likely of all others, is a prolapsed bladder. Our diagnosis, however, will be easily effected by using the catheter, when, if it is the bladder, emptying causes its collapse and the entire disappearance of the tumor. But if, after the complete evacuation of the bladder, there is yet a tumor containing fluid, exploration should be resorted to. This will clear up the diagnosis, provided the exploring trocar is large enough to evacuate a part or the whole of its contents. There are other fluid tumors, arising from the broad ligaments near the ovary, probably dependent upon a great increase of one or more of those transparent cells of serum, so generally seen by looking through this peritoneal duplicature, towards the light. These may be mistaken for actual ovarian cysts, and are doubtless the cases of ovarian disease that are permanently cured by a single tapping. No means of diagnosis now known would enable us to decide, with any certainty, between the two except chemical and microscopic examination of the fluid. The fluid is a limpid serum of very low specific gravity, sometimes not above that of distilled water, often not more than 1004, not coagulable by heat and devoid of any microscopic peculiarity. It has a remarkable semblance in most of its qualities to pure water. Cystic tumors of the abdomen, arising from other points, and hydatids of the peritoneal cavity, can be distinguished with certainty in no way except by exploration and examination of the contents. The history will, if carefully and intelligently detailed, show something, perhaps, that we may seize upon to aid us. The case should commence, if ovarian, in a tumor arising from the pelvis, gradually *ascending* into the abdomen. If abdominal, it is first noticed in that cavity, and may descend until it occupies all the abdomen, and then the pelvis also. If hydatid, the increase is mere tumidity, not a well-defined tumor, and it commences in the abdomen.

The distended bladder, accumulation of gas in the intestines, or of fæces, ought not, in the present state of our science, to embarrass us any longer than the catheter or a cathartic could be brought to bear upon the case. As soon as the bladder is emptied it will collapse. The gas in the bowels causes tympanitis of the abdomen, and thus ought to be detected. The accumulation of fæces can be removed, when the tumor will be gone. Hysterical distension of the abdomen, said to simulate pregnancy, ovarian, uterine, and other tumors, entirely disappears under the influence of chloroform, as shown by Professor Simpson, on many occasions.

Visceral enlargement, as liver, spleen, kidneys, and tumors growing from them, are not unfrequently mistaken for these tumors. I have a patient now laboring under enlargement of the spleen, who has been told more than once, that she had ovarian disease. Unless the enlargement of the liver or spleen is excessive, I cannot see how a mistake can be possible. The history as to where the tumor was first observed should be carefully traced. If either of these, it has descended. I have not seen a liver or spleen occupying the cavity of the abdomen so completely, but that its well-defined edge could be felt for a considerable distance, and this edge is always below, while the upper boundary is less defined or traceable beneath the ribs. I have, on several occasions, seen the spleen enlarged and dislocated, occupying the left iliac region, and reaching up towards the hypochondriac, but there are always sharp edges somewhere. This is not the case in ovarian dropsy; it is round, somewhat even, and elastic to the touch.

The liver is also sometimes displaced to such an extent as to rest upon the pelvic brim; and, when enlarged, it may occupy an extensive space in the abdomen. The three important points to be made in the differential diagnosis between displacements and enlargement of the liver and spleen and ovarian tumors are: 1st, they are flat in front, instead of globular; 2d, by somewhat forcible percussion even very decided intestinal resonance may be heard through them; 3d, by well-directed manipulation in the horizontal position the displaced organ may be partially or completely returned to its natural nidus.

Mr. Brown mentions recto-vaginal hernia and dislocation of the ovary into the cul-de-sac of Douglas. The diagnosis would be difficult and unimportant unless in exceptional cases. The great importance of a correct diagnosis is based upon the urgent symptoms and fatal tendency of the disease.

Retention of menstrual fluid, from imperforate hymen (or other obstruction to its outlet), also hydrometra, as soon as we have by physical examination, history, and the rational symptoms, decided that the patient is not pregnant, the finger and sound will clear up all doubts in a short time. Obstructions will be ascertained or overcome by them, and our misgiving dispelled.

Acute, and sometimes even subacute, inflammation of the peritoneum is occasionally accompanied and succeeded by hard, fibrinous deposits of various sizes and location in the abdomen. When in the iliac and hypogastric regions they may be mistaken for tumors. They are flat, immovable, sensitive; yield resonance in a very decided manner upon percussion, and date their existence from an attack, more or less remote, of peritoneal inflammation.

Supposing our diagnosis complete as to its being an ovarian tumor, we have yet to learn, for the more intelligent treatment, several other things; among these are: What are the contents and construction of it? Is it monocystic or polycystic? Are its contents partly solid, or wholly fluid? Although, probably, not always possible to decide these questions without exploratory operations, we have some means of clearing them up. A diligent and careful examination by percussion and inspection will enable us to judge correctly, in most cases, whether the tumor is monocystic or polycystic, or otherwise. If monocystic, the tumor is regular in its rotundity and outline; if polycystic, there is some irregularity of elevation, made out best by sliding the hand over the surface. Fluctuation, caused by percussion, is the same in all directions and from all points of it in monocystic. In polycystic it is very obscure, except over partial measurements. The fingers placed near each other over the same cyst feel the fluctuation very sensibly; but when one is removed so as to pass over the partition between it and the next cyst, the fluctuation becomes more obscure. By examining all parts with both hands, separating and approximating each other, we make out the dimensions and situation of the cyst, which lies in contact with the abdominal walls. The fluctuation, or its absence, will determine whether a given part of the tumor is solid or fluid. The hard parts of an ovarian tumor are, almost invariably, at the bottom of the tumor, and may be reached by the finger per vaginam. While our fingers are in contact with the base of the tumor in the pelvis, if it is wholly fluid, we may feel fluctuation, if the top of the tumor is struck with the other hand. If a solid part intervenes between our two hands, fluctuation would not be experienced.

CHAPTER XXXIX.

OVARIAN TUMORS, CONTINUED.

Treatment.

It is not necessary to interfere, in any manner, with some cases of ovarian dropsy. Indeed, it is right to let all cases alone that do not impair the health or threaten the life of the patient. There are many instances which advance slowly, or remain stationary for a great many years, and prove but an inconvenience. We would not be justified in active interference in these cases; much less should we do anything directly for cases in which independent complications of a fatal character exist, *e.g.*, phthisis or cancer, albuminuria, etc. When, however, the disease is making obvious progress, and particularly when the advance is sufficiently rapid to leave but little doubt of its proving fatal within the average time of their duration, we are bound to make every effort within our power to save or prolong, as much as possible, the life of our patient.

The treatment of ovarian tumors may be divided into palliative and curative. The one intended to relieve, as far as possible, the sufferings of the patient under the disease, or to retard the rapidity of its progress; the other to remove or destroy the tumor, and thus do away with the cause of the evil entirely.

When doubt exists as to the propriety of instituting radical treatment, we should continue to pursue the palliative until that doubt is dispelled. There are three sorts of cases to which the palliative is indisputably adapted. They are, first, those in which it is not desirable to use radical means in consequence of the absence and probable great distance of urgent symptoms, while there is a steady advance. The second class of cases is that in which the symptoms are urgent, but in which it is not desirable to use radical means in consequence of the slight chances of success. The third are such as, in their nature and condition, would call for curative means, but the patient will not consent to their employment from fear of the danger or pain they inflict. The first set of cases is not very frequently met with compared to either of the others; yet we do occasionally meet with these slowly marching cases, in which we have an opportunity to try the effect of medicines; and it is precisely in this kind of cases that we *appear* to derive most benefit from medicines internally administered. We are apt to believe that the tardy development is dependent upon the virtue of some favorite remedy used, and deceive ourselves as to its efficiency, when really all depends on the natural slowness of the tumor. The alteratives, as mercury, iodine, sarsaparilla, chlorine, etc., have all had their advocates. It was at one time, and even now is, the practice of some men of ability to give mercury to very slight ptyalism, with the hope of bringing about absorption. Iodine, administered frequently, so as to induce its specific influence upon the organism, has been, and is still, by some highly lauded as capable of curing ovarian dropsy. A chronic administration of either of these remedies is sure to affect unfavorably the general health; and, as it is extremely doubtful whether there is any efficacy in them, we should not be too profuse in their use. Effusion into the peritoneal sac, or subacute inflammatory complications, are often very much benefited by a moderately protracted course of these remedies. For the same purpose, local depletion, counter-irritants, such as iodine ointment, strong enough to induce irritation of the skin, are often useful; so are diaphoretics, diuretics, and cathartics. In the second class of cases we need not feel so restricted in our efforts at palliation. It is best, however, to bear in mind that too great activity of medication will often do more harm than good. Our object should be to promote such functions as are obstructed or restricted; the kidneys, for instance, need especial attention, as also the intestinal canal. The acids have always seemed to me to be particularly applicable to these cases. The nitric, nitro-muriatic, sulphuric, phosphoric, acetic, are all useful, and may be alternated often with the hope of relieving the distressing indigestion attendant upon great distension and imperfect performance of the renal functions. They also very much moderate the distressing exudations from the skin, which are often present. The chlorinated tincture of iron is also an excellent tonic. These remedies may very properly be administered in some of the bitter infusions,—quassia, chamomile, wild-cherry bark, etc. The best time to give them is immediately after eating. Stimulants ought not to be too freely used, as they encourage the establishment of complications. Brandy I think the best of the stimulants, and it should be given more for the purpose of inducing sleep than anything else; and this it will often do when taken in a sufficient dose on an empty stomach at bedtime. When great restlessness and want of sleep are wearing out the patient, we must, as in all similar circumstances in other diseases, resort to the assortment of anodynes, beginning with the less disturbing, being sure to be under the necessity of ending with opium. Chloroform, internally administered, is, I am confident, not sufficiently relied upon. Teaspoonful doses, given in milk, will seldom fail to induce a fine anodyne effect. There is greater necessity, perhaps, for a gradual increase of the dose in using it than opium, or most other efficient anodynes. Hyoscyamus, belladonna, cicuta, should all be tried before opium.

We must be on the alert for complications, and ready for their appropriate treatment. The distressing constipation, which often annoys the patient and physician, will demand a great share of our attention. Injections of water and various substances will, of course, suggest themselves. It has occurred to me to be able to induce free movements of the bowels by having a pint of warm lard thrown high up in the bowels when they are very obstinate; the longer the lard is retained the better. This, administered once a day, will act excellently well sometimes. An ounce of fresh beef's-gall, with three or four ounces of water, often does as well. But the time comes, sooner or later, with the steadily increasing pressure of the tumor, when to lessen its size is indispensable to the further extension of life.

Tapping suggests itself as the only surgical palliative in this state of things. This operation is more beneficial in unilocular tumors than in any other sort, but is applicable as a palliative measure, in any tumor containing fluid, when demanded by the supervention of urgent symptoms indicating the necessity of immediate relief. Under the desperate circumstances mentioned, there can be no question about the propriety of tapping the patient; yet this apparently trifling operation is not devoid of inconveniences and dangers that should be weighed deliberately, and, if they do not deter us from resorting to it, will at least make us particular not to use it as anything but an indispensable remedy. One serious inconvenience connected with tapping is the readiness with which the fluid accumulates in the sac.

The dangers of tapping are both immediate and remote. The immediate are such as are connected with, and occur immediately upon, the performance of the operation. Dr. Simpson sums up five that are more frequent, and against which we should be upon our guard. First, the chance of wounding the urinary bladder. This may be avoided by evacuating the organ, unless it is tied to the abdominal wall by adhesions, which we can ascertain by introducing the sound. Second, the puncture of the uterus when it is drawn up with the tumor. By introducing the sound into its cavity we may learn its whereabouts, and thus be enabled to avoid it. Third, the front part of the tumor may be traversed by the Fallopian tube, and this last be wounded by the trocar. Fourth, the internal venous circulation, on account of the pressure, is obstructed sometimes, and the blood is directed to the veins in the walls of the abdomen or tissue, so that these veins may be wounded; but generally they are large and may be seen, and thus avoided. Fifth, the epigastric artery is sometimes wounded. We should carefully feel for the pulsation of arteries in the thin walls before the trocar is plunged into the tumor. As may be seen, these dangers may, for the most part, be provided against; but the second class of dangers, namely, the remote,—those that follow the operation some time after its performance, and are not dependent on the manner or place of the puncture,—are not so easily avoided.

The dangers and benefits of tapping cannot, and ought not, to be estimated by comparison with other operations. Each operation, of whatever kind, has its place, and is followed by its good or bad effects, for the reason, among others, that it is appropriate, or inappropriate. Generally, no two operations are applicable to any one condition of things; and we should not allow the question of danger to decide between them, unless in very rare and exceptional cases. The statistics, as far as I have been able to collect them, may be well summed up, as Dr. West has done, and I shall rely upon his figures:

> "The chief, indeed, almost the only numerical data of which we are possessed, bearing on this subject, are derived from a table of 20 cases, compiled by Mr. Southam, of 45 cases collected by the late Mr. Lee, and of 64, the results of which are given by Professor Kiwisch. Of these 130 cases, 22 terminated fatally within a few hours or days after tapping, and 25 more in the following six months; or, in other words, 34.7 per cent. of the cases ended in the patient's death in the course of half a year after the performance of tapping. In 114 of the 130 death is stated to have taken place: 22 within less than ten days, 25 within six months, 22 within one year, 21 within two years, 11 within three years, 13 after a period exceeding three, and in some amounting to several years.
>
> "In 109 of these cases, we are further informed how often the patients had been tapped. It appears that 46 died after the first tapping, 10 after the second, 25 after from three to six tappings, 15 after seven to twelve, 13 after more than twelve."

It would appear that the first tapping is very much more dangerous than subsequent ones. Dr. West says further:

> "Unfavorable, however, as are the conclusions to which we are irresistibly led by such facts as those which have just been mentioned with reference to the ultimate issue of tapping, it is yet very questionable whether they represent the whole of the truth concerning this matter."

Dr. Atlee, of Philadelphia, thinks tapping not a very dangerous operation. Mr. Brown thinks its dangers greatly overrated.

There can be but little doubt that much of the mortality of tapping is due to the fact of the desperate character of the cases in which it is used; and the reason why so many die in so short a time after the first operation is, that in many instances the patient is almost moribund before it is resorted to. When not attended with the immediate dangers above enumerated, tapping is either followed by great relief from suffering or by the remote or sequential dangers. They are, for the most part, prostration or inflammation. The prostration is sometimes so great, that no management can prevent the patient from dying in a very short time. Such great prostration is, however, exceedingly rare; it is more common to have it in a more moderate degree. The patient will feel faint for an hour or two, and then gradually rally, or she may continue to be pale and languid for several days. For such slight cases, the horizontal position, rest, and good, digestible, somewhat stimulating food, is all that will be needed. When the prostration is great, and danger of fatal sinking present, the case must be treated energetically. The means calculated to bring about reaction must have reference to the causes of the prostration. The evacuation from the general vascular system is not a cause, because the fluid in the tumor is extravascular; but it is a sudden change in the distribution of the blood. The evacuation of the abdominal cavity of so large a bulk of its contents, and the inability of the abdominal muscles to contract sufficiently to keep up the pressure to which the viscera have been habituated, are the causes of the irregular distribution of the blood. The want of pressure upon the abdominal viscera, allows a large accumulation of blood in the veins, and it is there retained. In proportion to the amount thus collected in the abdomen, will the blood be withdrawn from other parts and organs. The brain will partake of this temporary anæmia, and consequently be incapable of discharging its functions with its wonted efficiency. This is the condition,—not a want, but an irregular distribution of blood. Our first object should be to, as nearly as possible, re-establish the previous condition of the abdomen. This can be, to some extent, accomplished by pressure, with compresses and rollers. The compresses should be as large as the space covered by the muscles of the abdomen, and thick enough to fill up much above the level of the ribs and iliac bones on the side. The roller should be applied from the pubis to the ensiform cartilage, with as much power as the patient can bear without great discomfort. Then the head should be persistently kept below the level of the body. This simple treatment, instituted early, will do more than all other means without it. We can very properly, however, give stimulants, in addition, when necessary. When this danger is passed, inflammation of the sac or peritoneal cavity is next to be apprehended. The sac undergoes every degree of inflammation, from the slow, subacute, unobserved degree, which vitiates the fluid effused into it, either by causing decomposition in it, or by the production of pus, or effusion of blood inside, or fibrin on the external surface—in this last case causing adhesion—or such degeneration of the walls of the sac as to cause an obliteration of the cavity, a cessation of its secreting powers, or a perforation, and consequent peritoneal communication; or, what is perhaps more common, an acute degree, announced by severe pain, referred to the point most intensely affected, or to the whole abdominal region, thus showing the probable involvement of the peritoneum. Indeed, I think it very probable that the sharp pain ordinarily present in these cases, indicates peritoneal inflammation, and that there is but little pain in the case of inflammation of the fibrous and internal coats of the sac. Fever, of a somewhat high grade, is apt to attend upon the degree of inflammation last mentioned, accompanied by headache, weariness, aching in the back, limbs, etc. But in the inflammation of the inner coats, in which pus or fibrinous products are effused in the fluid of the tumor, there is generally but slight fever, perhaps none at first; but the vital powers are more or less depressed, copious perspirations at night, possibly delirium, and in bad cases, all the symptoms of pyæmia, hectic, exhaustion, and death. Now all morbid conditions resulting from tapping should be met promptly by the remedies appropriate to them when they occur under other circumstances,—antiphlogistic regimen, depletion, fomentations, cathartics, anodynes, alteratives, etc. In pyæmia, tonics, stimulants, good diet, and time will be our resort.

The operation of tapping is simple, and easily performed generally. To avoid the depression which follows the evacuation of so large a quantity of fluid as is contained in the abdomen sometimes, we should have our patient on the side, very near the edge of the bed, with her head and shoulders low. Two large and long hand-towels should be passed around her body, with the edges close together upon a level with the point where we wish to introduce the trocar, and these ends given to an assistant, who stands behind the patient. The assistant having in charge these hand-towels should be directed to draw upon them so as to keep up a state of tension as the fluid is being evacuated. To avoid the dangers enumerated as immediate, we should assure ourselves that the bladder is empty, and if we mistrust that it is not in its proper place, we should introduce a sound, so as to assure ourselves of the whereabouts of the fundus. If we have not already done so, we must sound the uterus, also, and thus be sure of its harmless position. After these precautions, the best rule, perhaps, is that given by Dr. Simpson, and that is, to feel for the most fluctuating point, the place where the walls are thinnest, look for veins and feel for the pulsation of arteries. The thinnest part, where fluctuation is most evident, is usually the right place to make the puncture; but there is not always any such point, there being but little difference in this respect over the whole of the front surface of the tumor. In such case we may be governed by the ordinary rules for the place for tapping. The linea alba, between the symphysis and umbilicus, is the most eligible in the greatest number of cases. If any objection to this arises, a point midway between the umbilicus and the anterior superior spine of the ilium is, as a general thing, safe and effectual as any. Some surgeons recommend other places as free from the objections that are sometimes urged against these points. They say that tapping through the vagina is quite safe from the immediate, and not so likely to be followed by some of the sequential disasters. The rectum is thought to be still better by some. The vagina is quite a commendable place, if we are careful to ascertain well the position of the bladder and uterus, and avoid them. Our instrument (the trocar) should be large, four or five lines in diameter; the point should be sharp, and a little longer than they are usually made. The canula if not large will not freely discharge the fibrinous concretions or thick treacle-like fluid, and if the point is not long and sharp, we inflict considerable unnecessary suffering in the introduction of the instrument. We may plunge the instrument in towards the central axis of the tumor, until sent home to the rim of the canula. If, however, our instrument is not pretty sharp, it will be very much better to make an opening with a very sharp, thin bistoury, which will cause less suffering, and answer every purpose as well.

For the purpose of avoiding some of the dangers connected with tapping, Mr. Wells has invented a trocar that prevents the ingress of air, and attaches a rubber tube to the canula to carry the fluid clear of the patient and bed, while Dr. Emmett advises the use of the spray during the operation, and every effort to prevent air from entering the wound.

I have never seen any serious effects follow tapping without these precautions. Notwithstanding this favorable experience, I would advise every practicable precaution recommended by these eminent observers to avoid the disasters which have occasionally occurred.

Since the general introduction of the aspirator many surgeons think it better practice to use that instrument in the evacuation of the tumor. It has been pretty well proven, however, by the late investigation of Drs. Lusk and Proctor, that there is not so much difference in dangers resulting from the use of the aspirator instead of the trocar, as was expected from the experience of Dieulefois and his followers. Several instances have been recorded in which death occurred from the use of the aspirator.

The third sort of cases to which palliative treatment is applicable, those in which our patient will not submit to radical means, must be managed in almost every particular as I have described the treatment for the other two kinds. Remembering the rules and rationale, it will not be difficult to adapt our means to the end in view.

Curative Treatment.

The curative treatment of ovarian disease is believed by almost all authorities to be practicable only by surgical means. There are some very respectable writers, however, who believe that there are cases in which we may hope for success from medicinal and mechanical treatment without the use of surgical instruments, and they think that there is enough virtue in such means to warrant a trial in very many instances.

The immediate objects to be accomplished are, first, to arrest the growth of the tumor, bring it to a stand-still, and thus avoid the disastrous results which attend the attainment of very large size, with its consequent pressure, ruptures, etc. Second, when this is not practicable, to obliterate the sac or sacs. The sac is sometimes reduced by contraction to a mere knot of compressed tissues, which are more and more atrophied and wasted, until very slight traces of their existence are left; or, by inflammation and contraction, the tumor is converted into a fibrinous mass, enveloped in a fibrinous sac, which remains the same throughout life with very little alteration; or suppuration may accompany inflammation, the whole tumor be softened down into pus, and discharged by ulcerating through the vagina, rectum, abdominal walls, or bladder, and all traces of it disappear. Or again, the walls may collapse without shrinking much, and adhere by adhesive inflammation, and in this way its effusive surface be destroyed.

When neither of the above two immediate objects is practicable, or it may not be desirable or advisable to attempt them, we may, thirdly, remove the whole or a part of the tumor from the abdomen, and thus either get rid of the whole of the offending growth, or, after a part is removed, hope to effect, by one of the processes of obliteration above alluded to, the destruction of the balance. The means used for the arrest sometimes cause an obliteration of the sac, and do more than merely stop its growth, so that it will not be the best plan to separately treat of those means by which we attain the first object desired. I shall consequently feel at liberty to introduce and speak of such as sometimes arrest and sometimes cause a disappearance of the tumor.

Three general ideas seem to govern individuals who rely largely upon the use of internal remedies for the cure of ovarian dropsy, viz., that the disease is inflammatory in its origin and continuance, and that antiphlogistic and alterative remedies, by arresting this morbid process, will stop its growth, and that the conservative powers of the system, aided by sorbefacients and secernents, will remove it; that the tumor is developed in consequence of the presence of some one of the cachexiæ,—scrofula, for instance, as Dr. Bird distinctly avers. Physicians who entertain these notions of its origin hope to make a cure by changing the general action of the system by all the means usually recommended for the correction of scrofulous tendencies to disease, by tonics, good diet, properly regulated exercise, clothing, bathing, and specific medication; that its origin is entirely independent of either inflammation or scrofula,—an hypertrophy, in the strict sense of the term, of certain normal conditions,—a nutritional development of tissues similar to the production of nutrition elsewhere. Those who entertain this doctrine believe, also, in the atrophicating qualities of certain medicines and mechanical appliances, and hope, by the well-directed employment of them, to at least arrest their growth, if not cause their removal by absorption. A number of cases are on record that encourage the hope of doing something by medicines internally administered; and while I am free to state that I have really hardly any faith in them as curative means, the recollection of the discouraging results of any kind of treatment forbids me too strongly deciding against their use in properly selected cases. Nor do I think it fair to say, as has been said, that cases treated by internal medication and recovering are but instances of spontaneous cures, and would have done as well or better without the treatment. Dr. Denman, in his *Midwifery*, by Dr. Francis, at page 151, says:

> "In the beginning of this dropsy, when the increasing ovarium is first perceptible through the integuments of the abdomen, and sometimes in its progress, there is often so much pain as to require repeated local bleeding by scarification or leeches, blisters, fomentations, laxative medicines, and opiates to appease it. I have also endeavored to prevent or remove the first enlargement by a course of medicines, the principal of which was the unguentum hydrargyri rubbed upon the part, or calomel given for a considerable time in small quantities with an infusion of burnt sponge, or the ferrum tartarisatum or ammoniacal, trying occasionally what advantage was to be obtained from blisters, from a plaster of gum ammoniacum, dissolved in the acetum scillæ, or, lastly, from electricity. From all, or some of these means, I have frequently had occasion to believe some present advantage was obtained or mischief prevented; but when the disease has made a certain progress, though a variety of medicines and of local applications have been tried, no method of treatment has been discovered sufficiently efficacious to remove it or prevent its increase."

Colombat is of the opinion that "though we ought not to place much confidence in the means derived from medicine, strictly so called, we are of opinion that they ought always to be employed before recurring to those offered by surgery. Consequently sudorifics ought first to be prescribed; for example, guaiac, sarsaparilla, and vapor-baths, resolvents, and, amongst them, mercurial frictions, successfully employed by Clark and M. Nauche; hydriodate of potash, with the internal use of iodine in small doses; sea-bathing, or salt-water baths, from which M. Laennec, of Nantes, says he has obtained most excellent effects; the thermal baths of Aix, in Savoy, or those at Barège, and, lastly, antimonial frictions, cauteries, moxas, and blisters, applied upon the abdomen. Diuretics, such as squills, nitre, etc., which, according to Haller, were usefully employed by Willis, a decoction of ashes in the proportion of a handful to the quart of water employed by Petit Radel, and from which he obtained a cure after having punctured the cyst. Lastly, purgatives in divided doses, as, for instance, aloes, rhubarb, croton oil, calomel, combined with castile soap and sulphate of potash, etc., are other means which, in conjunction with abstinence and compression of the abdomen, may be prescribed at the commencement of the disease for the purpose of assisting the absorption of the fluids, at first small in quantity." After trying all these, however, surgical treatment, he thinks, will be our only resort in a vast majority of cases. The efficient application of pressure seems to promise more than internal remedies. Well-regulated, efficient, and long-continued pressure may produce obliterating inflammation of the sacs, and consequent cure; or, by affording great resistance to the expansion of the tumor, arrest its growth.

Surgical Treatment.

Resolution and absorption of an ovarian tumor is a very doubtful fact, however, and notwithstanding their unaccountable disappearance, should not be counted prognostically. The second object in our treatment, that of obliterating the sac *in situ*, affords more reason for hope in properly selected cases. The means used consist of tapping, with pressure, with injections of stimulants to induce inflammation of the sac, and with injections and pressure combined; or, what is sometimes successful, the establishment of a fistulous opening in the sac, that either communicates externally through the abdominal walls, through the vagina or rectum, or simply with the peritoneal cavity. The above-mentioned treatment is applicable, properly, to the unilocular or single cyst cases only, as it is impracticable to tap, inject, or establish a fistula, when there are many sacs; and, what is still more discouraging in the multilocular variety, the sacs are not only filled again after tapping, as is generally the case with the monocyst, but there is a constant reproduction, or, perhaps, it would be more correct to say that they are continuously developed from the ovisacs that are matured every month. Tapping, followed by pressure or injection, is very apt to change the condition of the tumor in one respect, at least, and that is, to cause adhesions to the surrounding peritoneal surface. In one case of unilocular tumor, in which an external fistulous opening was made after the patient had been tapped six times, and had iodine injections three times, the sac, so far as we could determine, was universally adherent; no portion of it could be brought out of the wound.

Very fortunate instances sometimes occur in which the evacuation of the tumor by tapping is followed by a speedy and permanent obliteration of the sac. It is exceedingly doubtful, however, whether these were not cysts developed from the broad ligament, and not involving the ovarian tissues at all. Certainly they are exceptional, and cannot be expected in any given case, so that we ought never to be satisfied with tapping when our object is the obliteration of the cyst.

Pressure, in conjunction with tapping, is applicable, perhaps, to a larger number of cases than any of the modes of treatment yet mentioned. It is very much more successful in cases of the monocystic than in any other variety. The application of pressure to a tapped sac has for its object a complete closure of the cavity of the cyst in such a manner as to bring its walls, as nearly as practicable, in contact throughout. This at once, if thoroughly effected, modifies the secerning capacity of its surface, and perhaps, from the time of its application, arrests more or less completely the effusion of the fluid. Now, if this cannot be done so as to operate upon all the surface of the walls, we can almost always bring some portion of the collapsed walls in contact. The continuous and prolonged contact of these surfaces brings about a low, and in some cases a pretty high grade of inflammation, causing adhesion or a change in their structure, so that they are no longer of the same ovisac nature, and hence they do not effuse the thick albumen previously produced, and the tumor remains inactive or shrinks, and nearly or entirely disappears; or suppurative inflammation may dissolve down and discharge the mass through some adventitious or natural outlet.

The manner of applying the pressure is of the greatest importance. The apparatus should be permanent, and exert as much force as the patient can bear without too great pain, fever, derangement of the abdominal viscera, or other indications of too acute a degree of inflammation in the cyst or damage to some organ. It should be applied to the tumor as nearly as possible, and the forcible pressure should be exerted alone upon the collapsed mass, so as to crowd it back against the sacrum, lumbar muscles, spine, and other hard parts of the posterior wall of the abdomen. In order to do this properly, after the fluid is evacuated as completely as possible, we should examine the abdomen minutely, so as to ascertain as clearly as possible the position of the collapsed cyst. This will usually be a little more to one side than the other, and we may generally easily define its shape and get a good idea of its size. We should now construct a compact compress, corresponding in shape and size with the shape and size of the evacuated sac. The compress should be embraced by solid wood or tin outside. The compress can be made of hair, gum-elastic material, or napkins. If of the latter, they should be well stitched together, so that there can be no shifting in their position.

After attaching the soft portion of the compress to the hard firmly, so that any pressure upon the latter may be exerted unvaryingly upon the former, it may be placed immediately over the tapped tumor, and pressure applied from a direction to press it against the hardest part, bearing on the posterior walls of the abdomen or pelvis. An attentive examination of the tumor under the pressure of the instrument will inform us pretty accurately as to the efficiency, completeness, and direction of the pressure of the compress. The compress may be managed better by a belt of soft but firm leather, to surround the body in such a place as to press over the centre of the compress. The power and direction of the pressure may be regulated thoroughly and at will by subjecting it to a tourniquet screw pressure from the belt. Of course there must be thigh and shoulder-straps to the belt, in order to keep it from slipping up or down. When we have adapted these simple contrivances, we should turn the screw to such a degree as to press strongly as the patient can bear, and with it thereafter regulate the pressure as we may judge best. Having thoroughly satisfied ourselves of the appropriate adaptation of the apparatus, we should wrap the whole abdomen agreeably tight, from pubis to sternum, with a flannel roller. We should every day remove the flannel roller, and examine the compress and belt to be sure that they are not disarranged, and if in the least so, we should readapt them. We may tighten the screw or loosen it each time, or allow it to remain untouched, as the case may be. The greatest care should be taken not to produce too great pressure with this compress. It should be loosened when chilliness, febrile excitement, or other general signs of distress are added to local pain; it may be tightened as soon as the symptoms decline.

This mode of applying pressure, I think, is much more efficient and manageable than the plan recommended by the late Mr. I. B. Brown, the accomplished surgeon of female diseases and injuries, of London. His plan is to make a graduated compress of napkins so as to fit the top of the pelvis, and after applying it over the tumor, so as to press it down into the pelvic cavity and against its back part, place over the whole a broad bandage tightly fastened from pubes to sternum. With this appliance we cannot always be accurate in the extent, position, and rate of the pressure, and, consequently, much more skill and experience are necessary in its application. Its success, hence, was much more frequent in Mr. Brown's hands than it has been with the profession generally. I am not aware that Mr. Brown teaches the necessity of pressure to all the collapsed tumor, but understand him to make most of his pressure at the origin of the tumor,—the ovarian region. The tumor, when collapsed by tapping after great distension, seldom sinks anything more than partially into the pelvis; the long-exercised traction upwards generally lifts the ovary of that side above the pelvis, and thus we may generally somewhat accurately fit our means to its slope and position. An objection, Mr. Brown thinks, sometimes applied to pressure, is the presence and great aggravation of prolapsus uteri. This objection, it will be apparent, is very much more applicable to his mode of causing it than the one I recommend. Multilocular tumors may be cured in this way perhaps more frequently than any other except extirpation, for the pressure may be made to bear upon and greatly influence the development of the small cysts that are not evacuated by pressure. I have more than once evacuated several sacs through one opening in the abdominal walls by partially withdrawing the trocar, and directing the point toward a full sac after the one first pierced had been evacuated. This should be attempted in a multilocular tumor before we use pressure, and it is allowable, I think, to introduce the trocar in several places where there are a number of cysts that cannot be reached by the instrument from one point. I would not be understood as advising a reckless use of the trocar in these many-cysted ovarian tumors, but after we have decided from the circumstances of a careful examination of a given case that tapping and pressure is the treatment, we risk nothing, I think, in being thorough in our efforts to evacuate as nearly as possible all the sacs. The bad effects arising from tapping and pressure are inflammation and its consequences. When there are symptoms of severe acute inflammation, the pressure should be removed, and leeches, cathartics, etc., should be employed to moderate or remove it. If the inflammation is in the sac, we should wait until all the acute symptoms subside before the pad or compress is placed again. If, however, we can satisfy ourselves that the inflammation is in some other part distressed by the pressure, by varying the direction of the pressure, provided we can include the tumor under it, we need not wait until all the acute symptoms have vanished. I have a better opinion of this kind of treatment, when carefully managed and watched, than any other, except the complete extirpation of the ovary.

Injection of the Sac.

Another plan of obliterating the sac of ovarian tumors is to first evacuate, and then inject it with some substance calculated to induce inflammation in it, which, by its adhesive or destructive processes, may completely effect this object. A large number of cases are reported cured by this plan of treatment. For obvious reasons it is almost exclusively confined in its usefulness to the unilocular variety. Under certain circumstances only can we expect to reach more than one cyst at a time with the trocar and injections. When a cyst is simple, the patient in good health, and we succeed in properly managing the operation, there is not a great deal of danger in it, and we may reasonably hope for benefit from it. The most simple, and I think effective mode of operating, is to first draw off nearly all the fluid, except, say, one or two pounds, as well as we can judge of it, with a large trocar. After this is accomplished, we should pass an elastic catheter or other flexible tube through the canula of the trocar to the bottom of the cavity. With a hard rubber syringe we may inject the medicine, whatever that may be, through the catheter into the interior of the cyst. By using this elastic tube there is no danger of failing to carry the material to the part we desire to reach without its coming in contact with anything else, or being decomposed before it arrives at its destination. The formulæ for this kind of injections are numerous, and several different substances used. Iodine seems now to be the substance generally employed. Dr. Simpson recommends several ounces of the tincture. Six ounces is probably enough to use at one time. I have used on several occasions six ounces of a mixture containing one scruple of iodine, two scruples of iod. potass. to the ounce of water. This is certainly iodine enough, if specific in its influence, to cure any tumor. My plan is to allow it to remain in the sac instead of removing any of it.

Iodism is likely to occur to a slight extent, but to be the source of no considerable inconvenience. If it should be thought best to remove a part, or the whole of the iodine, the better way to do it is to pump it out through the tube, by means of which it was introduced, instead of squeezing it back through the canula of the trocar. This plan of extracting it, precludes the possibility of allowing any contact with the peritoneum; which in the event of disarrangement of the canula, might otherwise take place. Although, ordinarily, no great amount of acute inflammation takes place as the effect of this injection, yet we should remember that it sometimes does proceed to a dangerous extent, and be upon our guard with the means necessary to prevent a fatal degree. In fact, it would be negligence on our part not to watch with solicitude all the most trifling operations upon an ovarian cyst. It may be asked whether iodine is the best substance to use as an injection in such cases? Although I have to some extent fallen in with the fashion of using iodine, I cannot resist the conviction that there are substances that would do as well, against which some objections that apply to iodine could not be urged. Iodine operates promptly upon the organism when introduced in this way, by being absorbed and taken into the circulation; yet, I think there can be but few who desire anything more than its local effect upon the inner surface of the sac. Alcohol, wine, brandy, in fact any local stimulant whose general effect after absorption is more transient, as well as less powerful, would perhaps answer just as well. It cannot be that the internal effect of iodine upon the kidneys and other organs of excretion can enter largely into its good effects, for if such were the case it would be better given by the stomach. Injection of iodine was regarded several years ago as the most eligible mode of treating this affection, because of its comparative safety and frequent success; but there can be no doubt that it was overrated, and now the profession is less ready to trust it. I believe it to be both more dangerous and less efficient than pressure after tapping. This is not in accordance with the opinion of Dr. Simpson, I believe. I have lately known of a case in which death occurred after having been treated with iodine injections combined with pressure. I speak of this case to warn against similar proceeding, for it is plain, upon a little reflection, that if the pressure is properly applied, it will so lessen the cavity of the cyst as to endanger the effusion of the iodine, through the puncture in the sac, into the peritoneal cavity, and thus induce a fatal peritonitis. And if pressure is to be used, we should wait for two or three days after the injection.

The last, and doubtless most effectual plan, for obliterating the sac, is the establishment of a fistulous opening, communicating with the peritoneal cavity, or the external surface, directly or indirectly, through the vagina or rectum. This plan is also the most dangerous plan, resulting in a large number fatally. Quite a difference in the effects, both remedial and morbid, may be remarked in the different places for the fistulous opening. When properly and carefully managed, the opening in the peritoneal cavity is productive of least harm, and less likely to be followed by a cure. The opening in the vagina is more effective, and the direct opening through the abdominal walls both more efficacious and more hazardous than any of the others. When a communication is perfected and perpetuated between the cavities of the tumor and the peritoneum, the surface of the latter being a better absorbing surface, the contents are absorbed, thrown into the circulation, and eliminated by excretion through the kidneys and alimentary canal. This process being carried on more rapidly than the secretion by the tumor, the latter is allowed to contract more and more, until its secreting surface is wholly lost, and indurated tissue is all that is left behind to mark its former existence. Some very important precautions are necessary to such happy results, as will appear by an attentive consideration of the subject. It is found, for instance, that sometimes the contents of the tumor are poison to the peritoneal lining of the abdomen, and therefore fatal inflammation may result from its effusion into the cavity. We cannot say, without an inspection of the fluid, whether this is likely to occur upon performance of an operation or not, and I fear that we can by that means arrive at only a presumption upon the subject. In evacuating for the first time these growths we find, occasionally, clear, transparent, good, innocent-looking fluid begin to flow, when, as the flow continues, the latter part looks darker, grumous, and ill-conditioned; now, whether we might not be deceived upon inspection is a matter of question, and really furnish a virus to the surface of the peritoneum, instead of the bland albumen of the healthy ovarian tumors. However this may be, we do know, from cases placed on record by Dr. Simpson particuuarly, and observed, not unfrequently, that these tumors do sometimes burst into the abdominal cavity, and disappear, without any bad symptoms, so that we are justifiable in hoping the artificial opening may result well. Dr. Simpson recommends (and it is certainly the most sure way, although, as I have remarked, we must, under all circumstances, be in doubt), prior to opening communication with the peritoneal cavity, that we tap the tumor, and remove some of the fluid for examination, and if it is the ordinary bland, mucilaginous, transparent substance found generally after first tapping, he assures us we may proceed to the operation unhesitatingly; or rather, may keep the puncture in the sac open afterwards, instead of allowing it to close up, as it usually does. This is done by, in the first place, not removing nearly all the fluid from the sac by tapping, but allowing enough to remain to keep it partially distended; and, in the second place, every twenty-four hours so to press upon the tumor as to well up the fluid through the opening in the sac, and thus break the slight adhesions which may have formed between the edges of the wound, and allow it to escape into the peritoneum. Dr. Simpson thinks this is the safer way, so far as the danger from the operation is concerned, but, as will be seen, not so certain of accomplishing the object. He has cured cases in this way. The most effectual and the most dangerous way is to cut down upon the tumor, and remove a piece from its wall large enough to insure patency, withdraw a part of the fluid, and then close the wound in the abdomen, and allow the rest of the fluid to flow into the peritoneal cavity thence to be absorbed. The immediate danger in this operation is that of dividing some of the bloodvessels which ramify through the walls of the tumor, and thus allow internal hæmorrhage to take place. To avoid this it is recommended by Mr. Brown to draw out, examine, and divide only that portion which is clear of vascular ramifications. Others have recommended to tie any branch large enough to bleed. There is but little doubt that the precaution recommended by Mr. Brown would be sufficient to avoid that difficulty. The large wound through the peritoneum makes the chance of inflammation in that membrane greater than the mere puncture of the trocar. Upon the whole, I think I should prefer Dr. Simpson's plan of keeping the opening made by the trocar in the tumor patent, by frequent well-directed manipulation. It ought to be practiced, I think, oftener than every twenty-four hours; as often as every twelve, for the first two days. It will, probably, be found, upon extensive trial, that it may not always be practicable. Should there be adhesion at the point where the trocar passes, it would necessarily fail.

The plan for making a fistulous opening externally is more practicable, perhaps, than the one just detailed, from the consideration that it is more manageable.

The operation is simple, and not attended with much immediate danger, the danger coming in the shape of acute inflammation soon after the operation, or exhausting suppurative inflammation and its attendants. Mr. Brown, who has given it a more extensive trial than anybody else, selects a point midway between the umbilicus and the anterior superior spines of the ilium of the side in which the tumor originated. His plan is to make an angular incision at this point down to the peritoneum, dissect up the angle from that membrane so as to completely expose it, evacuate the tumor through this exposed part with a trocar, stitch the sac to the sides of the opening, enlarge the puncture in the cyst, and keep it open by a pledget of lint or other substance, as he finds most convenient. Others cut down to the peritoneum, at a point midway between the umbilicus and symphysis pubis, stitch the sac to the sides of the wound, and keep open by lint or stomach-tube. Care should be taken, especially if the contents of the sac should have a suspicious appearance, to prevent it escaping into the peritoneal cavity. Often there is adhesion at this part, when the stitches will not be necessary. This opening should be kept patent until the cavity of the cyst is lost by contraction, inflammatory adhesion, or granulation, or all these combined, which is probably the common mode of their disappearance. Some difficulty will be found in doing this, there is such a strong tendency in the wound to contract and heal up by granulation. If necessary, we may from time to time somewhat enlarge it with the knife, and we should not allow it to close until the discharge has entirely ceased. From what I can see of the dangers of this operation, they are very little, if any, less than those of ovariotomy, and I should not feel induced to resort to it unless it were in a simple cyst, where tapping, injection of iodine, or the use of pressure had entirely failed, or where, after exposing the cyst, ovariotomy was found impracticable from extensive adhesions. This I have done in one instance. The adhesions were so extensive that the cyst could not be removed; in fact, they seemed to be about universal; the incision was small, only admitting two fingers; the sac had adhered at the point where the opening was made, so the incision was all that was necessary in the way of an operation. The patient died of acute peritoneal inflammation in three days afterwards. A post-mortem examination revealed extensive inflammation of the sac and peritoneum.

Professors Kiwisch and Scanzoni, of Wurtzburg, are warm advocates of a fistulous opening through the vagina into the tumor, to be kept open until the same obliteration takes place that was spoken of as occurring in the case of opening through the front walls of the abdomen. Scanzoni operated on fourteen cases: eight resulted in a perfect cure; in two, the fluid collected again in a few weeks; one died of typhus fever two months after; and three were lost sight of. In none of the fourteen did death occur as a consequence of the proceeding. He mentions one case only, in his whole experience, in which death occurred from peritonitis, and that was Professor Kiwisch's case. Scanzoni admits its danger, but shows quite a favorable opinion of it. Dr. West gives three cases of his own, two of which were cured, but had formidable inflammation; the third died, not as an effect of the operation, but from something else, which he does not state. Scanzoni taps with a trocar through the vagina, and allows the canula to remain until the cure is effected.* This, of course, occupies a variable time. The tube is withdrawn by Scanzoni by the eighth or tenth day in some cases. He says that some of his cases recovered without any sign of inflammation or other inconvenience. Dr. West operates by introducing the trocar and withdrawing the fluid, passing a number twelve catheter through, and removing the canula over the catheter. The catheter is allowed to remain until the cure is complete. The cyst cannot always be reached from the vagina, and only in such cases as it is crowded down into the pelvis, so as to give obvious fluctuation in that canal, should we think of this operation.

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* The only case I have operated on in this way died of pyæmia from suppuration of the cyst. The canula remained for fifteen days.

When the cyst is discovered while yet small and occupying the posterior cul-de-sac, tapping and drainage will often result in a cure. I have once succeeded in obliterating a tumor as large as an orange by this method. Dr. Emil Noeggerath, of New York, thinks their growth may be arrested with much certainty by puncturing them with a very fine trocar or hypodermic syringe. He says he has treated about ten cases by this method, and is so well satisfied with the results as always to attempt the cure of small cysts in this way. He has also improved upon the operation of Kiwisch and Scanzoni by making a free incision into them through the vagina, and stitching the sac to the incision. He has thus succeeded in draining quite a number of large ovarian cysts. Another method of treating these small cysts, original with Dr. Noegerath, consists in rupturing them by pressure between the fingers of one hand in the vagina and those of the other above the symphysis pubis.*

Electrolysis.

Among the expedients for the treatment of ovarian tumors must be enumerated electrolysis, for although it has not been subjected to the test of experience, yet there have been a number of undoubted cases of cure by this process.

Dr. Paul F. Mundé, in an exhaustive paper, published in the second volume of *American Gynæcological Transactions*, sums up the result of his research thus: "Out of fifty-one cases twenty-eight were either completely cured or permanently relieved. This makes about fifty-five per cent. Thirteen, or 25.4 per cent., were followed by dangerous and even fatal results, nine of which, or 17.6 per cent., proved fatal. Six cases were not affected by the treatment, and four were temporarily improved. Thus in twenty-three cases, or 45 per cent., the objects of treatment were not attained."

It is not fair, however, to compare the results of oöphoro-electrolysis with ovariotomy as practiced by expert ovariotomists, because electrolysis is in its infancy, while ovariotomy has undergone vast improvements since it was first introduced. If we recall the time when ovariotomy was regarded as an unjustifiable operation on account of its want of success, and remember, that the fatality of that operation depended greatly upon the imperfection of its execution, and greater lack of skill in the after-treatment, we are warranted in indulging the hope that electrolysis may some day emerge from its present uncertainty and claim success to sufficient degree to be applicable to certain conditions of ovarian cases.

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* Second volume Transactions of the American Gynæcological Society.

There are two methods of applying electrolysis to ovarian tumors, one is the external or precutaneous, in which the electrodes are applied over the skin in such a manner as to allow the current to pass through the tumor. This method is less prompt and also less dangerous in its effects.

Dr. Frencisco Dichiara, Professor of Surgery, Palermo, Italy, reports a case in which there was great constitutional debility caused by some three hundred sittings. (Dr. Mundé's paper.)

The other plan of electrolyzing the tumor consists in inserting one or more needles into the tumor and connecting it or them with one electrode, while the other electrode is applied over the surface of the tumor or in the vagina, or by applying both electrodes to needles introduced into different parts of the tumor.

Experimenters in this practice are not sufficiently definite as to the kind of battery, the strength of current, the frequency or length of time of each sitting. These conditions, as well as the character of tumors likely to yield to the treatment, are points to be ascertained by further experiment. Neither is it yet determined whether the constant current or the induced is the better to use.

Dr. Trommhold, of Buda Pesth, is reported by Semeleder to have cured an ovarian cyst by the external application of the Faradian current.

For further information on this interesting subject, I would refer the reader to Dr. Mundé's paper, and to one in the New York *Medical Journal*, of June, 1876, by Dr. Frederic Semeleder.

The third object in the treatment, partial or complete removal of the growth, remains to be considered.

Vaginal Ovariotomy.

Six cases of vaginal ovariotomy are now on record, by Drs. Thomas, J. F. Gilmore, of Mobile, C. E. Wing, of Boston, W. Goodell, of

Philadelphia, R. Davis, of Wilkesbarre, Pa., and Robert Battey, of Georgia, all of which were successful.*

The practice originated with Dr. Thomas. The operation consists in making an incision through the posterior wall of the vagina, puncturing the cyst, withdrawing it, and tying the pedicle.

Dr. Thomas ligated and returned the pedicle, and closed up the wound. The most disagreeable circumstance following his operation was a smart attack of pelvic cellulitis. In Dr. Goodell's case the cyst was in a state of suppurative inflammation, and had contracted many adhesions, which he overcame by introducing the fingers through the incision and traction with the volsellum forceps.

The expediency of this operation is unquestionable where the diagnosis is complete, because the favorable termination of the cases indicate a greater degree of safety than abdominal ovariotomy, and the patient escapes the annoyance and dangers which attend the great development that necessarily follows, especially when the operator is an experienced gynæcological surgeon.

I should decidedly favor the idea of leaving the vaginal incision open for drainage, and through which the cavity might be washed out, to prevent septic poison from entering the system.

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* Emmett's Principles and Practice of Gynæcology.

CHAPTER XL.

OVARIAN TUMORS, CONTINUED.

GENERAL OBSERVATIONS.

Abdominal Ovariotomy.

DURING the time that surgeons were experimenting with different methods of performing ovariotomy, the incision was made in different localities, but now all operators make it in the linea alba, and between the umbilicus and the pubis.

As to the length of the incision, the exigencies of the case must govern us. Three inches will often be sufficiently long to permit the removal of an oligocystic tumor with slight or no adhesions; much more frequently, however, it will be necessary to make the incision five inches long; very seldom will it be necessary to make it longer than this.

Mr. Wells thinks that incisions which do not extend above the umbilicus are safer than those which do. Dr. Peaslee believes that the incision may be too short; less than three inches he thinks more dangerous than a greater length. The practical rule, according to Peaslee* (and I fully concur with it), is to make the opening into the peritoneal cavity for the removal of the tumor at least three inches long at first, then to prolong it if necessary, and only so far as is actually required.

If the incision is to be carried above the umbilicus, it should be carried around to the left and then back to the linea alba.

Treatment of the Pedicle.

Operators have not arrived at the same unanimity in reference to the management of the pedicle that obtain as to the size and location of the incision.

The application of the clamp is a very simple way of securing the vessels in the pedicle. After the tumor has been withdrawn from the abdominal cavity, the pedicle should be embraced by the clamp within half an inch of it.

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* Ovarian Tumors, p. 417.

The instrument should be tightened with sufficient force to perfectly secure the vessels against bleeding. The pressure should be as great as possible to not cut through the intervening tissues. After preparing the peritoneal cavity, the wound may be closed by silk sutures from above downward, the clamp placed crosswise on the skin at the lower extremity of the incision. Mr. Wells directs us to tan the extremity of the pedicle extending beyond the clamp with persulphate of iron.

In from four to ten days, sometimes longer, the instrument will become detached and may be removed.

Mr. I. Baker Brown, according to Peaslee, first used the actual cautery to divide the pedicle. A clamp is first applied so as to secure and fix the pedicle, and then the cautery at a red heat is applied in such a manner as to cook the parts between the tumor and the clamp, and afterward to burn through the pedicle and thus separate it.

If we have the iron at so low a temperature that we can make a prolonged contact and pass it over a larger space, the coagulation of the albumen in the tissue is so complete that there is no danger of hæmorrhage.

If, however, the cautery is very hot, it will sever the arteries without consolidating the parts, and thus permit as free bleeding as if the division was made by the knife or scissors.

The thermo-cautery of Paquelin, or the galvano-cautery, are the handiest instruments with which to cauterize the pedicle, but iron cauteries heated by properly constructed blowpipes, or a small portable furnace, such as is used by tinners for soldering purposes, will answer very well.

Dr. G. H. B. McLeod, of Glasgow, first conceived and executed the idea of securing the vessels by torsion of the whole pedicle. He twisted it with two stout forceps. Torsion of the vessels separately has also been practiced successfully.

The écraseur has been used for dividing the pedicle. In my first case of ovariotomy I divided the pedicle with that instrument, and secured it in the wound with its edge upon a level with the skin by passing the pins through it with which I closed the wounds.

Many other methods of securing the vessels in the pedicle have been devised, a thorough summary of which may be found in the admirable work of Dr. Peaslee, above mentioned, to which I would refer all who wish to study the subject in an extensive manner.

The Ligature.

It remains for me in this connection to say something in reference to the ligature which I generally use as a means of securing the vessels of the pedicle.

The kind of material used for ligating the pedicle has engaged the attention of the profession for a long time. Silk, hemp, catgut, horsehair, fibres from tendons of animals,—notably the deer,—metallic wire, etc., have all been used successfully, and most of them earnestly recommended by those who have tried them.

Four qualities seem to be of material importance, if not essential to uniform success, viz.: 1st. Sufficient pliability to secure perfect adaptation to the inequalities of the structure and density of the pedicle. 2d. Strength to bear the force necessary to complete the constriction of the vessels. 3d. Solidity enough to resist the effects of moisture for a sufficient time. 4th. Absorbability. Of all the articles mentioned in the list I think silk is the only one that presents all these qualities to any desirable extent, and I think it is now generally regarded as the best material for ligation of the pedicle.

The ligature should be long enough to enable the surgeon to manipulate it easily and handle it securely. If the pedicle is of sufficient length to permit of it, we should not apply it nearer than an inch to the tumor, and then separation should be made close to the tumor, thus giving almost an inch of tissue beyond the ligature. If the pedicle is too short for this we ought to cut into the tumor to lengthen out the substance beyond the ligature. This will do away with the danger of retraction and consequent loosening of the ligature. I have known of one fatal case of hæmorrhage resulting from retraction of the tissue of the pedicle through the ligature that I have no doubt might have terminated otherwise if this precaution had been observed.

Should the ligature be cut short, or left out of the lower angle of the wound? Dr. McDowell, in his first operation, tied the pedicle with a strong ligature, and left the end hanging out of the wound, and, before we learned how to nse antiseptics, I have no doubt that was the best way to use the ligature, as it kept the wound open and acted as a means of drainage. But such use of the ligature is incompatible with antiseptic treatment, for the reason that it permits the ingress of septic particles. There can be no question that, as the operation is now done under the carbolic spray, we ought always to cut the ligature short, return the pedicle carefully to its proper place, and close the wound as completely as possible.

Drainage.

It will be noticed that, in the description of the operation, I have not alluded to the subject of drainage. I believe, nevertheless, that there are some cases in which, some time during the after-treatment, drainage will become necessary.

If the difficulties of the operation render it impossible to secure the patient against hæmorrhagic transudation,—a thing scarcely possible with our improved methods,—a drainage-tube might be inserted at the close of the operation.

Drainage will become necessary more frequently after septic symptoms have developed.

After operating with all the antiseptic precautions now so easily at our command, we should be careful not to be too ready to decide that drainage is advisable, for it is not certain that even if some blood and serum should escape into the abdomen after the operation, it is not rendered innoxious by antiseptic precautions. The case of Dr. Goodell would seem to indicate that decomposition does not always occur in accidental effusion.

Should we conclude to employ drainage from the beginning, I would generally prefer to use the glass tube employed by Dr. Thomas and others, by introducing it through the lower angle of the wound to the bottom of the cul-de-sac, behind the uterus. Or, as Dr. Atlee told me, in conversation upon the subject, he sometimes made a siphon of thread or linen, by placing it in the lower angle of the wound, and leaving the outer end much longer than that within leading from the bottom of the pelvis. It should be remembered that the drainage-tube does not evacuate clots of blood; and that, as blood coagulates almost immediately after extravasation, it is consequently not removed by this kind of drainage.

In all cases where septic fever is developed some days after an operation we should examine the pelvis through the vagina, and, if fluid or clots are found behind the uterus, we should make a free opening and evacuate it. After thus removing the decomposing fluid we should introduce a somewhat large tube, and throw hot water, slightly impregnated with carbolic acid, through it, and wash out the cavity from which the offending material has been evacuated, and leave the tube in place until the symptoms have subsided.

The value of the antiseptic method employed during the operation and after-treatment is so well established that I do not consider it necessary to do more than to express my concurrence in its use, and nsist that no ovariotomy should be performed without it.

CHAPTER XLI.

ABDOMINAL OVARIOTOMY, CONTINUED.

BEFORE describing ovariotomy, I propose considering some of the more important questions presenting themselves to us, and which often embarrass the experienced operator.

First. Shall we operate on a small tumor? This question may be answered, with some qualifications, in the negative. As our object is to save the life of the patient rather than to remove the tumor, we should wait until some condition connected with the growth of the tumor *begins* to affect the health and thereby threaten the life of the patient. Until the life of the patient is jeopardized by the effects of the tumor upon the general health, in some way, we have no moral nor professional right to subject her to so great a risk as is incurred in ovariotomy.

Inflammation in the Tumor.

We should regard inflammation in the tumor, whether the tumor be large or small, with or without suppuration, as an indication for immediate operation, as the risks of the inflammation are very great, and are probably lessened by the removal of the tumor. This is especially the case if the inflammation is attended with hectic symptoms.

Although rupture of the cyst and effusion into the peritoneal cavity is not always attended with grave symptoms, yet the supervention of peritonitis to a serious degree, or a toxæmic state of the system which threatens life or the general welfare of the patient, demands the operation for the removal of the tumor, large or small, and drainage of the peritoneal cavity.

Pregnancy neither absolutely contraindicates nor demands ovariotomy. Unless there is very injurious pressure from distension, the operation is not demanded, and we should wait for that condition before we determine to interfere in any way. When dangerous pressure does occur, if the tumor is multilocular to such a degree as to make it impossible to remove any considerable quantity of the fluid by tapping, the choice lies between evacuating the uterus and removing the tumor. Dr. Barnes is in favor of inducing abortion first, and removing the tumor after the patient recovers from this operation, and the symptoms require it; while Mr. Wells advocates and practices the removal of the tumor, and a number of successful cases attest the soundness of his judgment. If, however, the tumor is oligocystic, or presents a large sac from which a great quantity of fluid may be removed, and much room thus gained, the tumor may be tapped once or several times until gestation is completed. I have in this way treated two cases, in which gestation went on to term, and the patients gave birth to living, healthy children. From one of these I removed the tumor six months after the child was born; the other, although the child is nearly a year old, is still carrying her tumor with comparative comfort.

Sometimes errors or carelessness in diagnosis lead us into mistakes of so grave a character as to call for unexpected resources. One of them is the unsuspected coexistence of pregnancy and ovarian tumor, and the wounding of the gravid uterus during the operation. I have collected the following cases as illustrative of the proper method of managing them.

The rarity of this class of cases, and the interest attached to them in a diagnostic and therapeutic sense, leads me to report the following case of my own, and to collect all I can find of a similar character:*

A physician from a neighboring city visited Chicago, accompanied by a patient, to consult me about an ovarian tumor. The physician is a man of the highest standing in the profession, and of unquestionable integrity and honor.

The tumor had been first noticed about one year previous to my seeing the patient, and had grown more rapidly in the last six months. The diagnosis given by the doctor was easily verified, viz., an ovarian tumor, most likely originating in the left ovary, and probably monocystic in character. The patient was an unmarried lady, twenty-three years of age, very modest in her demeanor, and, as I was assured by friends, of unblemished reputation. The cessation of the menses had occurred at an uncertain period, expressed by the term "several months since." Before visiting the city, her physician had proposed a vaginal examination, as one of the means of adding certainty to the diagnosis; but the patient begged so hard to be spared from what she regarded as a humiliation, that he was induced to yield to her wish. When I investigated the case, she shrank from it with much earnestness, and very plausibly contended that it could not be necessary, as neither of us seemed to have any doubt as to the presence and nature of the tumor; consequently I, too, omitted this important means of diagnosis. At this interview it was determined that an operation could not be long postponed, and that, as soon as arrangements could be made, I should remove it at her own home.

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* From American Obstetrical Journal.

Accordingly, in about two weeks, I was informed that everything was in readiness, and the patient desired to be relieved at once. Upon my arrival, I met four physicians besides the attendant, and in their presence another careful examination was made, and as before, and for the same reasons, vaginal exploration was dispensed with. All, however, seemed perfectly satisfied with the correctness of the diagnosis, and the necessity of an operation for the removal of the tumor.

Preparations were at once perfected, the patient etherized, placed upon the table, and an incision about three inches long in the linea alba exposed the sac. After assuring myself that there were no adhesions on the anterior surface, I introduced Spencer Wells's trocar, and drew off about twelve quarts of an amber-colored fluid. The fluid was thin, but somewhat viscid, presenting the appearance I had often witnessed in ovarian tumors. When the sac was nearly emptied, I noticed a tumor behind it, adhering to the sac and preventing it from passing out through the incision. The second tumor was elastic, and so perfectly resembled a secondary cyst that I had no hesitation in plunging the trocar through its walls, with a view still further to lessen the bulk of the entire mass by evacuating its contents. As the trocar met with unusual resistance, and nothing but blood passed through it, I became convinced that there was something unusual about it. The incision was somewhat enlarged, and as much of the emptied sac drawn out as would pass, when it was discovered that slight adhesions, and not continuity of tissue, connected the two. After the cyst was entirely withdrawn, I was astonished to find that the second tumor was the impregnated uterus, and, still worse, that it was wounded and bleeding. This revelation was accepted with many doubts by the physicians present, who were the friends and neighbors of the patient, and believed it impossible that she should be pregnant. The facts were so patent, however, as soon to overcome their incredulity.

At that moment I did not call to mind an almost precisely similar instance that had occurred to Mr. Wells, and could not recall a precedent for my guidance. The wound in the uterus had been very much enlarged by the contraction of the transverse, oblique, and longitudinal fibres of that organ, until, in the few moments that had elapsed since the puncture, it had become as large as a silver dollar. It seemed to me, in the short time I had for reflection, that the only way out of the difficulty was to evacuate the uterus. This was done by making an incision about four inches long from near the fundus downwards, so as to include the accidental aperture. The incision exposed the placenta at about the middle of its attachment. This organ was easily and rapidly separated by passing the index finger between it and the uterine walls, and completely removed. After this was done, the right side of the fœtus, the arm, hip, and feet were perfectly exposed. The breech was seized and drawn towards the opening, when the fœtus was expelled by uterine contraction. The membranes and liquor amnii were next removed, when the uterus was perfectly devoid of all its former contents.

Gestation had advanced to about the middle of the seventh month. The fœtus evinced no signs of life after its removal, and had doubtless died from the effect of hæmorrhage from the wounded placenta.

The incision in the uterus was closed by interrupted sutures of fine silk, including the visceral peritoneum, the whole of the muscular wall, and the mucous membrane. The sutures were cut short, and no provision made for their removal. By the time the sutures were all inserted and tied, the uterus had contracted very firmly.

Thanks to the valuable aid afforded me by the gentlemen present (whose names for obvious reasons I dare not mention) neither blood, nor amniotic, nor ovarian fluids had found their way into the peritoneal cavity.

In order to secure a free exit of the lochia from the cavity of the uterus, and thus prevent the danger of its passing through the wound, the os uteri was freely dilated with the finger, and a long flexible catheter left in it some hours. The pedicle of the ovarian cyst was tied with a double ligature of plaited silk, and returned into the abdominal cavity. The ligatures were brought out at the lower angle of the wound, and left long enough to hang down between the thighs. The wound in the abdomen was closed by interrupted sutures, and dressed with a thick layer of carbolized cotton batting. The only interest connected with the future progress of the case is, that there was not a disagreeable symptom, except a few trivial afterpains.

After the operation was concluded, I was consoled for my error in not making a vaginal examination, and consequent ignorance of the complicating pregnancy, by the assurance of all the gentlemen who assisted me, that their confidence in the chastity of the patient was equal to their reliance upon the faithfulness of their own wives, and that a suspicion of her purity would not be entertained by any one who was acquainted with her. Her complete recovery, however, and up to the present time her own entire ignorance that a fœtus had been removed with the tumor, together with the preservation of her reputation, which could not have been done by any other course, fully compensates me for the chagrin I felt for all my shortcomings in the case.

I have purposely omitted names, dates, and places, to avoid the possibility of identification of the patient; I am persuaded, however, that this will not detract from the interest of the case.

As the subject and manner of closing the wound in the operations for gastro-hysterotomy is now under discussion, I would call attention to this part of the procedure. The entire absence of septic or inflammatory symptoms, I think, gives evidence that there was no escape of blood from the edges of the wound, or from the uterine cavity into the peritoneal sac, and warrants us in assuming that the closure by sutures was judicious, if not the all-important condition of success. After the operation, it was quite apparent that a great change must take place in the relation of the edges of the incision in the uterus, to allow the least drainage into the peritoneal cavity.

The frequent occurrence of pregnancy during the growth of ovarian tumors is recognized by all experienced ovariotomists, and is a subject for consideration in all instances where a diagnosis is to be made preparatory to the removal of the tumor. Under ordinary circumstances, the diagnosis of this complication is not very difficult, as the uterus lies anterior to or on one side of the tumor, so that its presence and contents are easily ascertained, but exceptional cases are sometimes found when the difficulties are sufficient to mislead an experienced and accomplished observer. Mr. Wells acknowledges mistakes in his own practice, and mentions the fact that Dr. J. Marion Sims fell into an error of diagnosis and did not discover the complication until the gravid uterus was exposed during the operation for the extirpation of the ovarian tumor. A considerable number of other cases might be cited in which mistakes of this kind have occurred. The probabilities are that more of these errors arise from insufficient scrutiny in cases where the diagnosis might be made, than from an entire impossibility to ascertain the true state of things. Our improved methods of examination, and more perfect knowledge in interpreting the phenomena of pregnancy, ought to secure us against errors of this kind in all but the very rarest combination of circumstances.

As the known cases in which the double operation of ovariotomy and hysterotomy has been performed are very few, I have collected all I could find with my limited means of research, and will not apologize for reproducing them in a condensed form in this connection.

Mr. Wells publishes a case, alluded to above, in his well-known work on *Diseases of the Ovaries*, almost exactly like the one I have recorded. It was first reported in the *Medical Times and Gazette* of September 30th, 1865.

He had entirely overlooked the existence of pregnancy with ovarian disease, and after removing an adherent multilocular cyst of the left ovary, he felt what he thought was a cyst of the right ovary, —tapped it, and then found it was the gravid uterus. From this puncture two or three pints of bloody fluid escaped through the canula, when the tumor became much less tense; and he says on raising the tumor up, he saw the Fallopian tube passing from its upper part, and thus he knew at once he had punctured the uterus. He says:

> "On withdrawing the canula, a soft, spongy, bleeding mass protruded, and on putting in my finger to push this back and examine the uterine cavity, the anterior wall of the uterus, which was very soft and friable, as it had undergone fatty degeneration, gave way along the middle line from the puncture (which was near the fundus) for an extent of from three to four inches down the body toward the neck. With very slight pressure a quantity of liquor amnii and a fœtus of about five months escaped. I then easily peeled off the placenta from the inner surface of the uterus; the organ did not contract, and there was free bleeding from three vessels close beneath the peritoneum at the lower angle of the rupture in the uterus. These vessels were secured by three silk ligatures. Oozing still going on from the surface where the placenta was attached, I made a free opening into the vagina by passing my finger from above through the cervix and os, and then put a piece of ice into the uterus and held it within by firmly grasping the organ, which then contracted. I then brought the peritoneal edges of the tear in the uterus together by an uninterrupted suture of fine silk, one long end of which I had previously passed into the uterine cavity and out through the os into the vagina. By seven or eight points the edges were brought accurately together, and the other end of the silk was brought through the opening in the abdominal wall, with the ends of the three ligatures on the vessels in the uterine wall close to the pedicle, and were tied to the clamp."

The patient completely recovered.

I am indebted to Dr. Mundé for the following very interesting case, published in the *Australian Medical Journal*, of February, 1875, by Thomas Hillas, M.R.C.S., Eng., of Victoria, Australia:

"Mary McC., aged twenty-four years, single, was admitted to the Ballarat District Hospital, June 4th, 1872. The history of her case was peculiar. She believed that she became pregnant in March, 1871, and, not wishing to be confined in the district in which she lived, she sought admission to the lying-in ward of the Ballarat Benevolent Asylum. She was admitted there in November, 1871, and after staying there until the following June, a consultation of the honorary staff was called, and she was discharged, her case being deemed ovarian dropsy, and not pregnancy. On her admission to the hospital she was examined by the resident surgeon, and subsequently by the honorary surgical and medical staff, all agreeing that she was suffering from ovarian dropsy, and that it was a suitable case for operation. On June 13th, assisted by the honorary surgeons, Messrs. Nicholson and Whitcomb, and the resident surgeon, Mr. Owen, and the honorary medical staff, the patient being under chloroform, I commenced the operation, by an incision midway between the umbilicus and pubes. On arriving at the peritoneum, I made a small opening into it, when out spurted a large jet of venous blood, which the pressure of the finger controlled. I came to the conclusion that I had wounded, unwittingly, a gravid uterus, and, feeling sure of this, I extended the first incision upward to the umbilicus, when a large uterus rolled out on to the thighs, and the ovarian sac protruded. This was tapped, and about eleven quarts of fluid were drawn off; there were but few adhesions, which were easily broken down, and there was no hæmorrhage. The sac contained about a dozen small cysts, but, the external wound being large, there was no occasion to tap them. The pedicle was short and thick, and, after being tied firmly with a double whipcord ligature, the clamp was securely applied, and the pedicle divided, the ends of the double ligature being tied over the ends of the clamp. Now came the difficulty. The uterus was all this time lying on the thighs, with a fœtus in it, and a wound through its muscles, probably into the placenta. Some of the bystanders advised that the wound in the uterus should be sewn up, and that organ replaced in the abdomen; but seeing that labor must come on soon, and that the rupture of the uterus would most likely occur at the seat of injury, I personally decided to perform the Cæsarean operation as being the most likely means of giving the patient a chance to recover. The uterus was incised to about five inches, and the placenta and a fœtus, alive and well developed, at about the eighth month of gestation, extracted. I then stitched up the wound in the uterus with about nine or ten silver-wire sutures, carefully tucking the cut ends down into the incision. Immediately on completing this the uterus contracted firmly. I then sewed up the wound in the abdomen with deep and superficial stitches, the deep stitches including the peritoneum, leaving the clamp at the lower margin of the wound, and a good deal dragged upon. The right ovary was the one affected, and the patient measured sixty inches around the abdomen before the operation. The sac and its contents, after removal, weighed thirteen pounds, and are preserved in the hospital dispensary. The patient vomited for about forty-eight hours after the operation, having been an hour under chloroform. This was relieved by morphia and ice, and on the fourth day all unfavorable symptoms abated. There was a discharge of pus from the lower portion of the wound, which ceased in about a fortnight, and then completely healed. She was discharged, cured, at the end of six weeks. On July 3d, a month after the operation, she menstruated moderately for four days, and again on the 28th of August. I have seen her several times since, and she is in perfect health."

Dr. Mundé also kindly sent me the following three cases which, although not exactly corresponding to the cases already reported, will doubtless be of interest in this connection. The chances of saving the lives of the patients would undoubtedly have been increased if the operator had, in the first case, removed fœtus and tumor, instead of leaving both untouched; and in the second, the tumor as well as the child. They will serve as a warning to others not to commit the same error:

"Dr. Erskine Mason reported to the New York Pathological Society in 1877 the case of a patient, thirty years of age, single, who entered Roosevelt Hospital, July 30th, 1877. Since eighteen months increase of abdomen, the circumference of which at umbilicus measured thirty-nine inches. A vaginal examination showed the uterus high in the pelvis and movable. Distinct fluctuation in abdomen; area of flatness not changed by position of patient. Diagnosis of ovarian cyst confirmed by one of the most expert ovariotomists of New York city. Ovariotomy was considered indicated. On opening the abdomen a cyst appeared, which was opened by the trocar, and eight ounces of fluid evacuated, when this cyst was found to be the pregnant uterus. The trocar wound was closed by sutures, and the abdominal wound also united. Patient gave birth the next day to a six months' fœtus. Death of collapse eighteen and a half hours after operation. Autopsy showed large multilocular cyst of left ovary. Uterus well contracted; no peritonitis."

Of the second case, Dr. Mundé says:

"I have looked over Olshausen's recent work on *Diseases of the Ovaries*, and found mention of only one case of Cæsarean section complicated with the presence of an ovarian tumor. The operator was Kob, of Stolp, in North Germany; the original article appeared in the *Transactions of the Berlin Obstetrical Society for* 1873; *Beiträge zur Geburtshülfe und Gynäkologie,* vol. ii, p. 99. I have this work, and abstract the case briefly, as follows:

> "Patient forty years; had four children; pregnant near term with fifth. Found pelvis occupied by a dense, fluctuating tumor, preventing entrance of the head. The patient was much debilitated by this presumably ovarian growth. Finding the passage of the child impossible through the normal pelvis, the tumor was punctured per vaginam, but only thick colloid mucus flowed out in small quantities, even after enlargement of the puncture with the bistoury. Finally the Cæsarean section was performed, the child extracted alive, and continued to live. The wound was closed by thread sutures, and death followed on the third day, probably from septic peritonitis. The cyst was not removed, although special mention is not made of the necessity (the author probably looked upon it as malignant, as colloid tumors were formerly so regarded, and, therefore, thought its removal superfluous); but he states that, after the operation, colloid matter still escaped from the vaginal puncture. The operation was performed January 17th, 1873."

The third case was reported by Professor Lahs, of Marburg, in the *Deutsche Med. Wochenschrift,* February 2d, 1878:

> "L. was called to a pluripara in labor presumably eight days; found abdomen much enlarged, fluctuation all over; firmly adherent cyst of left ovary filling pelvic cavity and obstructing delivery. Cæsarean section; three silk sutures in uterus; cyst too firmly adherent to be removable. Death from collapse in twenty-four hours."

In this case no blame can be attached to the operator for not removing the tumor, the firm adherence of which to the pelvic cavity, and the prostration of the patient from her long labor, rendering so severe an undertaking unjustifiable.

Mr. Wells says, with reference to the question:

> "What should be done when a pregnant uterus is discovered during some stage of ovariotomy? Let it alone. . . . . But supposing the operator has penetrated the uterus or wounded it? If any conclusion can be drawn from the case in which I made this mistake, and emptied the uterus, and two other cases, in which the same mistake was made by other surgeons who did not empty the uterus, but closed the puncture in its walls by wire sutures, and both patients died after aborting, while mine recovered, it would seem to be the safer practice to empty the uterus."

The soundness of this teaching must receive the sanction of common-sense, and is happily confirmed by the result of the two additional cases, one published by Mr. Thomas Hillas, of Victoria, and the present one by himself. It will also be noticed that the treatment of the wound in the uterus, and the manner of closing the incision in that organ, had an important bearing on the subject in all three of these successful cases. Mr. Hillas closed the wound with interrupted silver sutures; Mr. Wells with an uninterrupted silk suture; while mine was closed with interrupted silk sutures. From what I could see of the more immediate effect, as well as from the final result, I cannot doubt that this procedure had much to do with the recovery of my case. Although Mr. Hillas makes no mention of his having secured a free exit for the discharge from the uterus by dilating the cervix, it is to be presumed that he did not neglect this precaution. Mr. Wells passed his finger down from the cavity through the cervix and os, while in my case I opened the cervical cavity with a large catheter. I think it is but fair to state that while these three cases were treated so essentially alike by all of the operators, neither of them was aware that there was any precedent for it. I certainly did not remember Mr. Wells's case at the time I operated, and I believe Mr. Hillas, like myself, had overlooked it.

Other considerations bearing upon the question of ovariotomy, as advanced phthisis, serious organic disease of the heart or kidneys, or malignancy of the tumor, in all or any of these conditions, I would refuse to perform ovariotomy and resort only to palliative measures.

We will often meet with cases that have been neglected until pressure has impaired the nutritive functions to such an extent that the recuperative powers of the patient have been greatly reduced. In some of these cases we may improve the general condition of the patient by tapping the tumor and restoring nutrition by proper measures. This should be attempted where there is a cyst from which we can reasonably expect to draw off a large quantity of fluid. If, however, the distension is caused by the growth of a multilocular tumor, with only small or moderately sized cysts, we should risk the operation without loss of time or addition of the risk of a fruitless tapping.

When the tumor is not large, or has been reduced by tapping, we should resort to tonics, abundant and nutritious diet, and surround the patient with the best hygienic conditions possible until her health is sufficiently restored to enable her to sustain the effects of the operation.

There are mental conditions which increase the hazard of an operation.

When a patient is very greatly depressed on account of bereavement, or other causes of intense grief, the indications should be very urgent to justify the immediate removal of the tumor; indeed, if it is possible, we should allow sufficient time for reaction from such a state of depression. I feel sure that I lost one patient because I could not pay sufficient attention to this condition.

Courage on the part of the patient is an important item in assuring success in ovariotomy, and we should inspire the patient with hope by every possible means. The most favorable view of her case should be presented to her, and every means taken to help her to expect recovery, instead of leaving doubt in her mind.

The menstrual cycle affords a time when the operation is more promising, and I think there is no doubt that we should operate as soon as the menstrual flow has subsided, if possible.

The time of year in this climate is not a matter of so much importance as in warmer latitudes.

I would rather operate in the warm than in the cold season, as ventilation can be secured much more easily at such times than during the inclemency of the winter season.

If we can command the time, without serious inconvenience to the patient in reference to the size of the tumor, it would be better to select a period between the two extremes of temperature.

The best place for the operation, if the patient has a comfortable home, is at her private residence instead of a hospital, unless it is one in which isolation and good ventilation can both be commanded.

A well-organized special hospital, in consequence of the good attention always at hand, is probably the next best place. When the patient comes to the city in a good condition for ovariotomy the operation should not be delayed lest the health of the patient be deteriorated by the urban or hospital atmosphere. If the operation is to be performed in a private house, the room should be selected with a view to good ventilation, quietude, and cleanliness. Mere convenience is not a sufficient reason for the choice of rooms, as no sacrifice is too great if it will insure success. It is hardly necessary to state that a good, faithful, and intelligent nurse is indispensable. The care of the patient should not be committed to interested relatives unless they possess the information requisite for correct treatment.

The personal supervision of the patient is a matter of the first importance. All of her functions, especially those of the skin, kidneys, and alimentary canal, should be regulated, if they need regulation, before placing her upon the table. The first by means of a warm bath, the second by the administration of some preparation of lithium or the acetate of potassium, and the third by the administration of a gentle but thorough cathartic; castor oil is ordinarily the best. Measures should be taken to keep up the action of the skin and kidneys. The under-garments should be woollen, and cover the patient from the throat to the feet, and enough changes secured to keep them clean and fresh, and the secretions encouraged by the administration of plenty of fluids, of which cold water is the best. The urine must be watched and its quantity and character regulated.

During the operation the patient should be, as near as practicable, covered, her extremities especially, with her woollen garments.

The personal preparation of the surgeon, assistants, and attendants should be equally careful. Perfect cleanliness in them is a matter of paramount importance; to this end, ablution of the hands and cleansing the nails must be thorough immediately preceding the operation. All of the articles used in the operation should also be as clean as possible. Every preparation should be made that will conduce to the convenience and easy access to every part of the patient by the surgeon and the assistants. A table of convenient size, say five feet long and twenty inches wide, and high enough to enable the surgeon to stand erect, should be placed near an abundant source of good light, and yet so that all may pass around it with ease. The table should be prepared by covering it with a comforter or blanket, and a pillow placed on the end most remote from the light.

When ready, the patient should be thoroughly etherized, preferably in bed, and placed upon the table, her wrapper drawn up close under her arms to prevent it from becoming soiled, and the abdomen covered with a rubber blanket, with an opening eight or ten inches long, and wide enough to permit of the exposure of the most prominent part of the tumor.

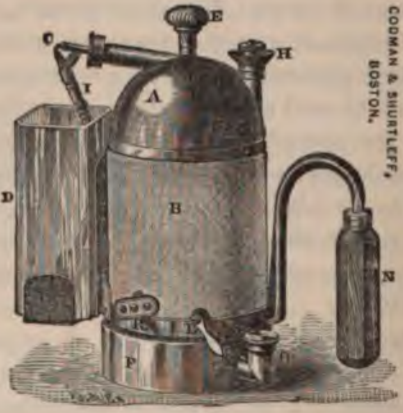
The surgeon may stand to the right side of the patient, or he may cause her to be placed near the end of the table nearest the light, with her limbs hanging over the end of the table, each foot resting on a stool, and take his position at the foot of the table. This is the position I prefer in most cases, as I think it leaves every part of the abdomen within easy reach, and the instruments may be placed on a table near enough to be entirely at his command.

The operation may be divided into three stages, and the instruments necessary to perform it into as many groups. The first is the exposure of the tumor; second, the removal of the same; and third, the cleansing of the peritoneal cavity and closure of the wound.

For the first we need a scalpel, blunt-pointed bistoury, scissors, a grooved directory, a sharp hook, and one or two sponges which have been thoroughly cleaned and soaked in water containing two per cent. of carbolic acid. For the second and third, a large trocar with rubber tube, long and large enough to carry the fluid over the side of the patient down into a receptacle under the table; a large steel sound, scissors, forceps, and thread, with which to arrest hæmorrhage; two large needles, armed with double-plaited silk ligatures, well waxed; clamps, wire écraseurs, and a half-dozen fine sponges that have never been in use, and thoroughly prepared by cleansing and carbolizing, and some pieces of fine soft flannel, one-half yard square; a half-dozen long, straight needles, armed with long silk ligatures, well waxed, and plenty of silk for tying small arteries; lint, several rolls of cotton batting, and a binder of fine flannel, long enough and large enough to cover all of the dressings. In addition to these, there should be plenty of hot and cold water in basins, carbolized oil, and a good spray apparatus for use.

There should be at least four assistants: one to hold the rubber cloth and steady the tumor, who may stand at the side of the patient; another to administer the ether; a third to use the spray, who may be situated so that he can direct it on the wound; and a fourth to use the sponges and otherwise assist the operator.

FIG. 160



CODMAN & SHURTLEFF, BOSTON.

Before the patient is put under the influence of ether, she should empty the bladder, and in default of her having done so, the catheter should be so used.

The spray should be used before the commencement of the incision, and continued during all of the steps of the operation. The incision is usually made in the median line, midway between the umbilicus and the symphysis pubis. The cut through the integument should be from two and a half to three inches long, and that through the subjoined aponeurosis and peritoneum only one inch in length. This is an exploratory incision, and will enable us to determine the nature of the tumor, the extent and firmness of the adhesions, vascularity, etc., or whether there is a tumor or not.

In making the incision, we may cut freely through the skin and adipose tissue immediately beneath it. This will expose the aponeurotic expansion of the abdominal muscles. We now, with a sharp hook, lift up a thin layer of this aponeurosis and divide it. If we are not in the median line, the edge of the rectus muscle will come in view. When this is the case, we search for that line by passing the grooved director, or the handle of the scalpel, into the sheath, first to the right, then to the left, and the instrument will be arrested at the border of the muscle, and this points out the location of the linea alba. By very light strokes of the knife, or the lifting up of a portion of the expanded tendon, we carefully divide it down to a less marked, yet usually distinct, layer of adipose tissue. This last is generally thin and loose compared with the subcutaneous stratum, and lies upon the peritoneum. It should be carefully divided, and the peritoneum brought into view. Here the operator pauses until all hæmorrhage ceases, and, if necessary, twists or ligates small arteries or veins which may bleed too freely. These steps in the operation, and in fact all others, should be taken without any hurry, and the operator should give himself time to thoroughly understand the anatomy of the parts with which he is dealing.

After the bleeding has ceased the peritoneum should be raised by the hook, and divided to an extent sufficient to pass the grooved director, upon which the division may be made to the extent of the deep portion of the incision.

There are four sources of possible embarrassment in opening the peritoneal cavity. The first and most common is the adhesion of the parietal to the visceral layer of the peritoneum covering the tumor. This is more of an embarrassment than danger, as the only harm likely to be done may be the opening of the tumor. The next most frequent is the presence of the bladder between the tumor and the peritoneum, in which case it will require great care to prevent wounding this viscus. If there is any doubt which the appearance of the parts will not solve, it will be well for some one who is not assisting the operator to pass the catheter into that organ. When the bladder is found in this position it may be avoided by extending the incision upward sufficiently to pass above it.

The third is the presence of the uterus beneath the incision. The use of the sound will enable us to diagnose this circumstance, if it has not been done in the examination before the operation.

The fourth is the presentation of the intestine. We may diagnose this by the contents, shape, etc.

When the peritoneum is divided sometimes ascitic fluid escapes, generally small in quantity, but sometimes copious. We should now inspect the exposed portion of the tumor. If it is an oligocyst, or monocyst, it will present a shining, pearly aspect, with very small vessels ramifying in its walls. If it belongs to the polycystic variety there will often be quite large vessels noticeable; the pearly aspect will be less marked, and sometimes replaced by a livid or red color. If it is a uterine tumor it will be of a dull red color, thick and fleshy to the sense of touch. Tumors of the omentum, malignant or otherwise, would not answer to this description.

Second Step.

When satisfied that the tumor is ovarian, we should introduce the steel sound gently and slowly; pass it over the anterior and lateral portions of the tumor, to ascertain whether there are any adhesions; if any, their locality and firmness. Often there will be some so very slight that they will give way as the sound is passed over the tumor.

The force with which the sound should be applied to these adhesions must be very slight, as it is not advisable to break up strong adhesions in this way.

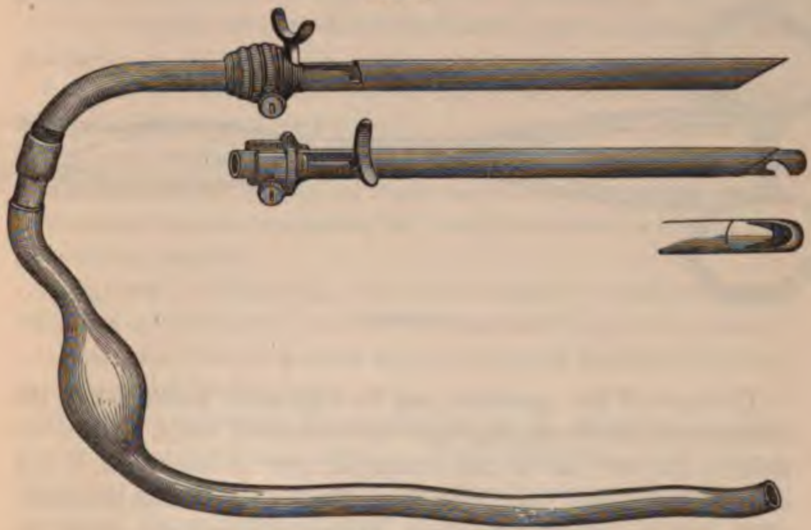
Should there be no adhesions discoverable by the sound, the presumption is that there are none. Upon this presumption our incision may be enlarged to the size of the tegumentary opening.

If adhesions are large and firm, the whole incision should be increased until five inches in length. I believe this to be the proper time to extend the incision to its required length, because we may the better prevent the flow of blood into the peritoneal cavity. Up to this time the assistant who steadies the tumor has very little to do; but, during the time of the enlargement of the incision and the removal of the tumor, he should keep the margins of the wound in such close apposition to the surface of the growth that nothing can enter the peritoneal cavity.

Ovariotomy.

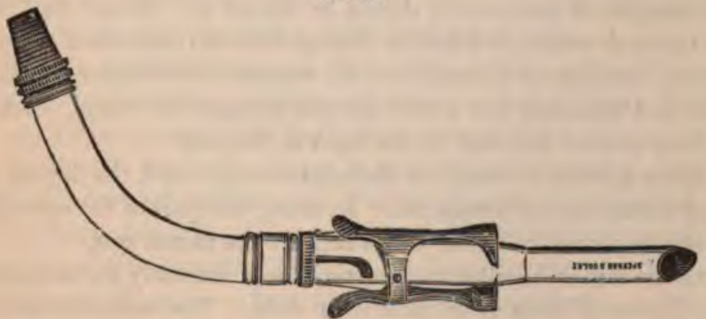
The second step in the operation consists in the removal of the tumor. The large trocar, with a rubber tube attached, so as to lead the fluid into a vessel under the table, may now be plunged into the cyst at the upper angle of the wound, and so much of the contents of the tumor as will pass through the tube be drawn off.

FIG. 161.



Fitch's Trocar.

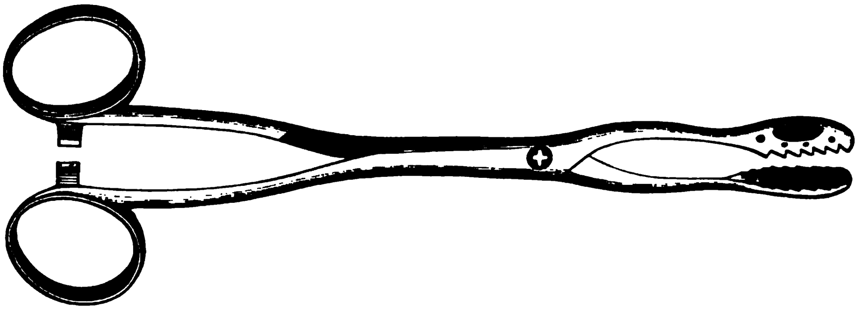
FIG. 162.



As the tumor decreases in size the sacs should be seized by hooks, the trocar or forceps, or both, as may be necessary, and drawn forward in such manner that the opening in it will be outside the incision in the abdominal walls.

In this way there will be less danger, if any, of the contents of the tumor escaping into the peritoneal cavity.

Fig. 163.



Nélaton's.

This part of the operation may be very much facilitated by the assistant judiciously pressing upon the abdominal walls. When the fluid in the first sac is thus evacuated, another large cyst, if any should present itself, may be perforated by the trocar from the cavity of the main cyst, and still others consecutively until the size of the tumor is small enough to pass through the incision.

Should the secondary cysts be small or their contents so viscid as not to pass through the trocar, the opening in the main sac may be enlarged sufficiently to admit the fingers or hand with which the smaller cysts may be broken up, and their contents evacuated through the main opening. While the inside of the sac is thus manipulated, the margins of the opening should be drawn out beyond the lips of the external wound, and held so that no fluid can enter the abdominal cavity. Sometimes the whole of the contents of the tumor will be so thick and tenacious that it will not pass through the trocar, when all of them may be removed by the hand in this way.

When possible to break up the internal cysts with the fingers, the hand should not be introduced. In doing this part of the operation, great care should be taken not to rupture the parent cyst.

As the tumor is collapsing we must look carefully for adhesions, and dispose of them as we meet with them. The omentum may be adherent to a part or the entire anterior surface of the tumor.

If the omental adhesions are extensive they may be overcome by insinuating the fingers from above between the cyst and the omentum and carefully separating them. We should endeavor to do this without tearing any vessels except at their extremities. After the separation we may turn this membrane back out of the wound, and allow it to remain there in care of an assistant until the tumor is removed. If it bleeds much, we may at once tie it as a whole or in sections, with fine silk, and return it into the abdomen. If the adhesions are small, we may lift the adherent portion up and ligate it *en masse*.

I do not now think it necessary to cut off the ends of the omentum below the ligature but return it all. In no case where I have done so has any disagreeable results followed.

Adhesions to the abdominal walls may occupy but a small space or they may be quite extensive, and may be in front or lateral portions of the parietes.

Long broad fleshy bands sometimes extend from the abdominal walls and spread themselves over the front and sides of the tumor.

These thick fleshy adhesions should always be ligated before they are separated from the tumor.

If the flat adhesions of the surfaces are in front, we are often unable to distinguish the peritoneum from other parts, and as a consequence the tumor is generally laid open in making the abdominal incision. The accidental opening is no disadvantage in such cases, as it enables us to evacuate the whole of the contents of the tumor without the danger of having it flow into the peritoneal cavity.

In this kind of a case the tumor must be evacuated before the adhesions are broken up. When the tumor is thus evacuated we may overcome the adhesions by introducing the hand into the empty cyst, seizing its walls and making traction from within, upon the points of adhesion, with sufficient force to cause them to give way, and if there be no visceral adhesions this is quite effective and safe.

Another method is to extend the incision upward until the boundary of the adhesions is reached and passed a short distance, then we can carefully separate them by the fingers from above downward on the outside of the cyst. There is ordinarily some oozing of blood from the abraded surfaces, but the contractions of the abdominal walls usually arrest it; if not we may cauterize the bleeding patches with the thermal cautery, take up the bloodvessels separately, and ligate them, or pass a curved needle, armed with thread, under the centre of them, on each side of them, and by drawing the thread, thus surrounding the patches, the surface will be puckered like the mouth of a purse, compressing the vessels sufficiently to arrest the hæmorrhage; the thread may then be tied and cut off. In this way all danger from hæmorrhage may be avoided. The long broad bands of adhesions may be tied in sections with fine thread and cut off close to the tumor.

When it is necessary to introduce the hand into the peritoneal cavity for any purpose during the operation it must be thoroughly cleansed and dipped in carbolized water.

As the tumor is being drawn slowly from the abdominal cavity, we should carefully watch for visceral adhesions. These should never be separated by traction, as above described, but the adherent portion of the cyst should be cut out with scissors, leaving a large margin attached to the viscera.

To secure the patient against the danger of the secretions, which might eventuate from the surfaces of these abandoned pieces of cyst, the inner membrane should be stripped off by the fingers or forceps. In doing this we should retain firm hold on the parts by seizing the margins of the adhering patch of the cyst instead of the viscera.

These directions are intended to apply particularly to visceral adhesions in the abdominal cavity, and are equally applicable to those within the pelvis, provided the adhesions are limited and may be easily reached and manipulated. Unfortunately, however, sometimes the tumor adheres with insurmountable firmness to the whole circle of the pelvic cavity, uterus, and bladder. In such cases I have no hesitancy in preferring enucleation, as taught by Professor Miner, of Buffalo. This may be done by cutting or tearing through the external layer of the cystic walls above the point of adhesion, and stripping it off from above downward into the pelvis, the fingers may be inserted between the outer and inner layers of the cyst wall, until the latter, with the contents of the tumor, is removed. In this operation the vessels, arteries, and veins, which ramify in the connective tissue adherent to the peritoneal membrane, are not torn to any considerable extent, and are separated from the enucleated tumor. The tumor is turned out of its external envelope, the broad ligament is not violated or disturbed; the tumor is removed from the ovary overlying that ligament. Without a knowledge of its anatomy, seeing the tumor come out without any pedicle, is calculated to perplex us, and we can hardly believe in the completeness of the operation.

The broad ligament, with the Fallopian tube, ovarian ligament, etc., contained within it, forms the pedicle, when the tumor is lifted out in the ordinary operation of ovariotomy, and the vessels pass through this to the connective tissue immediately beneath the peritoneum, covering the tumor. These are all left behind in enucleation.

The vessels and peritoneal covering are left to contract by their own elasticity, and as they are not torn, except where the vessels are very small, they do not bleed much. If any vessels bleed after enucleation they may be ligated separately.

After the adhesions are overcome and the contents of the tumor removed so that it may easily pass through the incision, gentle traction will enable us to lift it from the abdominal cavity. One assistant may support the tumor in such a position that none of its contents will escape into the pelvic cavity and thus expose the pedicle without traction upon it. After carefully inspecting the pedicle and passing the fingers around and along the whole length of it to be assured that it is perfectly isolated, the operator may pass a large needle, armed with a double ligature of strong silk (the braided is the best), through the middle of the pedicle, an inch below the tumor, and ligate it very firmly on either side. The pedicle may then be divided with scissors close to the tumor. The division should be at least three-quarters of an inch from the ligature, and perhaps an inch would be better.

If divided too near the ligature there is danger that by retraction the stump may be withdrawn from the loop and thus permit hæmorrhage to take place.

We cannot be too careful in placing the ligature, tying it tightly, and leaving the stump sufficiently long. If this part of the operation is not properly done there is *very great danger* that the shock of vomiting will loosen the ligature and cause the death of the patient by secondary hæmorrhage.

Before cutting through the pedicle it must be surrounded by a napkin at the ligated point to absorb the blood effused from the vessels of the tumor, and thus prevent it from passing into the peritoneal cavity.

Third Step.

The third step in the operation consists in cleansing the abdominal cavity and dressing the wound.

Before proceeding further the operator should examine the contents of the pelvis first to ascertain whether there are any bleeding points, and secondly to assure himself that the remaining ovary is sound and does not require to be removed. If the other ovary has commenced the process of cystic degeneration it ought to be isolated by a double ligature placed beneath it, and then removed.

If there have been adhesions, every point whence hæmorrhage is likely to occur should be inspected and the hæmorrhage checked by the means above mentioned.

As the fluids—blood, serum, ovarian fluids, etc.—usually gravitate into the pelvis, they may generally be cleaned away by carefully sponging that cavity.

With the left hand passed into the pelvis the intestines may be lifted up and held out of the way, while with the right the operator gently and repeatedly presses the sponge down into the hollow of the sacrum, and thus takes up all the clots, fluid, blood, serum, etc. When this process is finished the abdominal cavity should again be inspected and thoroughly cleansed by the sponges, and before closing the wound the ligatures should be cut short, the uterus and stump of the pedicle be placed below the intestines in their normal position. I think this last precaution of properly replacing the pelvic viscera of much importance. Before closing the external incision I lift the abdominal walls off the viscera and cause the spray to be thrown into the cavity of the abdomen to perfectly carbolize it.

I now close the incision with fine silk sutures about one-half inch apart, and passed in half an inch from the margin on the cutaneous surface so as to penetrate the peritoneum at least one-quarter of an inch from its cut edge, from the right, and penetrating the other side of the incision from within outward at similar points. When the incision is accurately closed I cover the wound with a piece of patent lint, saturated with carbolized oil, large enough to extend beyond the margins at least two inches in every direction.

The wound thus covered is further protected by cotton batting five or six inches thick, which extends over the whole abdomen and down well upon the symphysis.

The whole is secured by a flannel binder from the pubis to the ensiform cartilage. The spray is continued until the oiled lint is placed over the wound.

This dressing is not according to the Lister method, but I think it is quite as effective in keeping out septic particles.

I have given the reader in detail the method of operating which I now employ. Like most other gynæcologists who have practiced ovariotomy since 1859, I have performed the operation in many different ways, but for the last two years I have operated uniformly in the manner above described. Every step in the operation, as I now perform it, is done in the simplest possible way, and this I think a great recommendation.

I would impress upon my readers the great importance of gentleness of manipulation. We should not forget, in the excitement of the operation that we are handling the abdominal organs, and plunge our hands roughly and forcibly into the peritoneal cavity, search for adhesions, and tear them away violently, heedless of the damage thus inflicted.

I would not think it necessary to so implicitly insist upon gentleness, if I had not, on more than one occasion, seen the peritoneal cavity, with its contents, submitted to such violence. Above all things use no sponge-holder other than the fingers.

It is only necessary further to say that all the sponges used should be new and thoroughly carbolized. The carbolized water for the spray should be about three per cent.

CHAPTER XLII.

OVARIOTOMY, CONTINUED.

Accidents that may occur during the Operation.

UNFORTUNATELY in some cases of ovarian tumors, the adhesions are so extensive and intricate, and the cysts so changed by deposits of albuminous and fibrinous accretions, that the anatomy of the growth and surrounding organs is confused beyond recognition. The relations of the viscera and tumor sometimes are so unusual, and so contrary to all precedent observation, that the experienced operator is sometimes betrayed into mistakes and accidents of a very grave character. It will not be out of place therefore to warn the young practitioner of what may happen, and what is the best way of managing any accidents that may occur.

When the anterior portion of the cyst is generally and very firmly adherent to the peritoneum of the abdominal wall, the inexperienced operator will sometimes find himself separating the peritoneum from its natural attachments, under the impression that he is breaking up adhesions. There are probably very few of us who have not committed this mistake to a greater or less extent. This may generally be avoided by making the incision long enough to carry the opening above the point of adhesion, and then separate it from above. We may recognize the accident in its incipiency by turning the lip of the wound strongly outward, and inspecting the inner surface of the abdominal wall.

The absence of any but the fascial covering of the muscles will at once set us right. If, however, the peritoneum should be separated, it is of much less importance than we would expect. In one instance I have known several inches of that membrane entirely removed without affecting the speedy and perfect recovery of the patient.

Should this accident occur unwittingly, or in spite of our precautions, the membrane should still be separated from the tumor with as little injury as possible. and when we come to close the incision the interval between the membrane and the muscles should be thoroughly cleansed, the peritoneum smoothly applied to its natural surface, and included in the stitches with which the wound is drawn together. If the membrane is so mutilated that we are in great doubt as to the integrity of its structure the worst part may be cut off and removed.

During incautious separation of adhesions to the liver, spleen, or kidney, these organs may be wounded. If the surface thus injured does not bleed, we cannot do better, perhaps, than let them entirely alone. If, however, hæmorrhage results from the accident and the surface is small, we may surround the bleeding space by a fine silk ligature, in the manner already directed for similar places in the abdominal wall. If the surface is so large, however, as to make this impracticable, the actual cautery should be used for the purpose of closing the vessels. If the pelvic portion of the kidney is torn so that the urine flows from it into the abdominal cavity, nothing is left for us to do but to extripate the injured organ. I know of no precedent for this method of managing such a case, but in view of the fact that one kidney has been removed for other conditions without fatal results, I would not hesitate to give my patient the benefit of the operation.

Wounds in the intestinal canal, including the stomach, when there is no loss of substance, should be carefully closed with fine silk sutures. In closing such openings the stitches should be very near together to prevent the escape of fæces. It is also important that the edges should be smoothly coaptated, and the mucous membrane pressed into the tube to make sure that it does not intervene between the lacerated or cut edges of the wound. After an operation attended with this accident the peristaltic movement of the bowels should be quieted by a liberal and continued administration of opiates for at least ten days. The diet should be liquid, and probably beef soup, or beef essence would be the best.

If there is so much loss of substance as to make such a closure impracticable, the ends of the gut should, if possible, be brought out of the wound to establish an artificial anus.

By far the most difficult accident (and yet it would seem not altogether desperate) to manage, is the wounding of the urinary bladder, the gall-bladder, or ureter. When the gall-bladder is wounded the only way that we could hope to secure any chance of escape would be to stitch it into the wound,—and if necessary the wound should be sufficiently elongated,—to insure a temporary discharge of the bile externally. Of course a perfect cleansing of the abdominal cavity of all that fluid, would be indispensable to the avoidance of inflammation from its irritating qualities.

With reference to the lesion of the urinary organs I subjoin an abstract of a paper read at a meeting of the French Society for the Advancement of Science, by Dr. G. Eustache, of Lille (*Arch. de Tocal,* April and May, 1880).*

"Since such wounds are inflicted only in very complicated cases, when there exists widespread, resisting, and vascular adhesions, and when a protracted operation is thus rendered additionally difficult by the more or less prolonged contact of urine with the peritoneum and lips of the wound, they will indeed become a serious complication. This especially, because the already exhausted condition of the patient warrants *per se* a bad prognosis. Such at least is the generally accepted opinion. Now, Eustache, in his last ovariotomy, had the misfortune to make a large wound of the bladder, but the patient speedily recovered, notwithstanding that the urine had abundantly flowed into the abdominal cavity for over an hour. This occurrence suggested to him the idea that the prognosis in similar cases might be better than was generally admitted, and, provided adequate therapeutic measures were instantly adopted, might in future be still ameliorated. Accordingly, the literature of the subject was studied, but the information thus gained was almost *nil.* The writer, therefore, communicated personally with many of the leading ovariotomists, and the answers he received tended to confirm his previous opinion. He then proceeded to communicate what he had thus gleaned, and supplements the whole by an analysis of known cases.

"Renal lesions are in the first place considered. The case of Spencer Wells is cited, in which a firmly adherent kidney was removed along with the ovarian tumor, the patient dying soon after. Three other cases, all instances of erroneous diagnosis, are cited. From the records of these cases no conclusion can be drawn. Lesions of the ureters are next examined. Three cases where one ureter only was wounded are given. In each the patient was cured without even the leaving of a urinary fistula. All these occurred in Germany. The author was unable to find similar instances in the records of the French and English surgeons."

Finally, vesical lesions are disposed of, and the author refers to an interesting personal observation elsewhere fully described (*Arch. de Tocal,* July, 1879). Dr. Eustache concludes as follows:

"1st. Lesions of the urinary organs during ovariotomy are very rare.

"2d. Wounds of the kidney followed by extirpation proved fatal in the only case on record.

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* American Journal of Obstetrics, January, 1881.

"3d. Lesion of the ureters was in every case followed by a cure.

"4th. Vesical lesions were more frequently followed by a cure than otherwise.

"5th. When the ureter is divided it should be immediately united by sutures. Should this prove to be an impossibility the upper end of the ureter should be secured in the walls of the bladder. If a uretro-abdominal fistula supervenes, an artificial passage, going from the fistula to the bladder, should be established.

"6th. If the bladder has been opened during an operation, it should be immediately sewed up with carbolized catgut, and a self-retaining catheter introduced.

"7th. If the vesical opening occurs posteriorly (in the vagina), the catheter and several cauterizations will suffice to establish a cure.

"8th. In all cases of this kind subsequent treatment must be cautiously carried out.

"9th. Antiseptic dressings generally assure success."

CHAPTER XLIII.

OVARIOTOMY, CONTINUED.

After-treatment.

AT the close of the operation it will often be found that the clothing and person of the patient have become soiled, and it will be necessary to cleanse her and change the clothing. If the patient is strong, and there are no evidences of nervous depression or shock, this may be thoroughly but carefully done, and the patient placed in bed. If, however, she is cold, and the pulse is weak and quick, and other signs of exhaustion show themselves, we would add to her peril by too much attention of this kind. When we do not deem it best to remove the soiled clothing at once, we should carbolize the soiled places, and place dry woollen cloths between them and the skin to protect the patient from the chilling effects of the dampness. Bottles of warm water should be placed about her feet and limbs, and, in marked cases of shock, around the body also.

The question of administering stimulants must be decided by the conditions of the patient, the temperature of the surface, and the character of the pulse. If reaction does not take place readily under the influence of the warmth and covering, they should be resorted to very soon, and may be given by the stomach or rectum, or hypodermically. Brandy will generally be the best stimulant, but carbonate of ammonia or chloroform may be given until reaction is established. As the patient recovers from the influence of the anæsthetic, she will generally complain of pain, and will require an anodyne, which should be administered without delay in quantities proportionate to the pain. The anodyne may be repeated at such intervals and in such doses as are necessary to keep the patient free from pain, and no more.

The room should be darkened, but the windows so arranged as to admit an abundance of fresh air. If the weather is cold, the temperature ought to be maintained by an open grate, if possible, and not above sixty degrees (F.).

Another thing which I think should be insisted upon is, that the abdominal muscles be kept in a state of complete rest, by rigid confinement to the dorsal position, until all danger of traumatic peritonitis has passed, that is, for the first four or five days. In general, this position will not be very fatiguing if the influence of the anodyne is maintained to a proper degree. The evacuation of the bladder by the use of the catheter will be one of the means of commanding absolute rest.

The more fortunate cases will require no other treatment, and by good nursing will pass through the convalescence without much inconvenience.

Treatment of the Wound.

Unless something unusual occurs, such as discharge from, or pain in the wound, it need not be dressed until the fourth or fifth day. The cotton batting and oiled lint may then be removed, and if the wound requires no particular attention, both may be replaced by fresh material. Generally we will find no signs of inflammation or purulent discharge, everything looking fresh and solid. The dressing should be removed again on the sixth or seventh day, if suppuration or some kind of discharge does not render it necessary sooner, and at this time the stitches may be taken out, the wound cleansed with carbolized water, and dressed with adhesive straps so as to give support to the abdominal walls. The strip of lint, saturated with carbolized oil, should then be placed over the straps and the wound, where they cross it. From this time forward the dressing should be examined and attended to every second day, and, if need be, every day until consolidation is complete, which, when everything goes on well, will be in from fourteen to twenty days. During all of this time, and for two or three weeks longer, the binder and cotton should be continued, the latter gradually made thinner at each dressing until it can be omitted.

Attention to the Clothing.

When it is possible to put the patient to bed with her clothes clean and dry, every care should be taken to keep them so, and no change made until the fourth day. After that time, changes can be made as often as necessary to preserve cleanliness. It is often difficult, when a patient is very weak, to determine how much we may do toward removing soiled clothing. Remembering that the exertion is a cause of further prostration, and that soiled clothing is a source of sepsis, the practitioner will be compelled to decide how much the patient can bear, and personally supervise all attempts at changing the clothing and bed. If it is deemed improper to remove the garments which have become soiled, we can do much to avert the deleterious effects, which might otherwise occur, by using carbolic acid freely upon the soiled portions, and placing dry woollen cloths next the patient.

There are two symptoms so frequently met with after ovariotomy, apart from any dangerous pathological conditions, that they ought to be considered before studying the graver difficulties. While they are often not the result of, nor accompanied by, septic fever, nor other of the more fatal consequences of ovariotomy, yet, if not arrested or properly managed, they may, and sometime do, lead to a fatal termination. I allude to vomiting and tympanitis.

In many instances troublesome nausea and vomiting occur immediately after the operation. When this is the case it is generally the effect of the anæsthetic upon the nerve centres, and it is attended with vertigo, and more or less headache. Cold applications to the head and a hot water bag to the back of the neck, together with hot brandy and water, in small quantities internally, will generally relieve it.

A hypodermic injection of morphia and atropia, given at the time or soon after the operation is finished, will often relieve both the pain and vomiting. Sometimes this symptom, arising from this cause, will continue for two or three days, and gradually subside; and, when it resists appropriate remedies for twenty-four hours, it would be as well to not medicate the patient too much.

Anodynes.

When vomiting is caused by the secondary effects of opium, or some of its preparations, it is apt to come on the second or third day. The opium completely arrests digestion, and the ingesta, except what is injected, undergoes chemical decomposition, and the materials thrown up are very sour, and have a grass-green appearance. The patient is pale, cool, and quiet, though not stupid. The pulse is not changed, except, perhaps, weakened. The urine scanty, and ordinarily there is an abundant precipitate. This is usually a troublesome form of vomiting, and is benefited most by stimulants, as champagne and very strong coffee in small quantities. Carbonate of ammonia is often very useful. While the patient is fully under the influence of the opiate, the vomiting is moderated, if not entirely controlled; and it is sometimes a question whether we continue or withdraw the opium. When pain, septic fever, or other such indications exist, I would not hesitate to keep the patient under the influence of opium sufficiently to relieve the pain and vomiting together by hypodermic administration, or the use of suppositories containing morphia.

The forms of vomiting here mentioned are sometimes so obstinate as to make it impossible to administer medicine or nourishment by the stomach; and we often protract the suffering of our patient by vain attempts to do so. Generally it will be better practice to administer all of these by the rectum and hypodermic injections, and allow the stomach complete rest.

Rectal administrations are so efficacious, when well managed, that a patient may be sustained by them for many days.

Dr. Henry J. Campbell,* of Augusta, Georgia, by some interesting experiments, has enabled us to understand why food may be completely digested when adminstered per rectum.

He found that the milk he injected into the rectum of a calf made its way up into the small intestines, where it could be mixed with the digestive fluids. Milk, eggs, beef essence, finely chopped beef, and perhaps other forms of animal food in small quantities, will be retained and digested in sufficient amounts to sustain the patient until the stomach will regain its power of retention.

Tympanites.

Until the antiseptic method of conducting surgical operations was applied to ovariotomy, tympanites was of very much more common occurrence than now. Dr. Peaslee† says:

> "Some degree of tympanites usually occurs, even in the simplest cases, on the second or third day after ovariotomy, on account of the diminished contractility of the alimentary canal, and in such cases it subsides in the course of four or five days under the simplest treatment."

The conditions which usually give rise to the more obstinate forms, when not a complication of general traumatic or septic peritonitis, according to Dr. Peaslee, is atony of the intestinal canal, spasmodic condition of the sphincter ani, obstruction of the canal by fæcal accumulations, twisting of a convolution of the small intestine, and mechanical obstruction external to the alimentary canal itself.

As I have just remarked, tympanites from the first of these causes occurs as often as before the use of antiseptics.

Where we have to deal with the second condition a rectal tube introduced and kept in the rectum will be sufficient to relieve it.

The third cause of tympanites is more difficult to diagnose and also to manage. If the alimentary canal is well evacuated before the operation this form will not often occur. When we believe this to be the cause it will be operative only when in connection with atony of the muscles of the alimentary canal, and may be best relieved by stimulating enemata through a long tube, faradization, as practiced by Dr. Anthony on one of Mr. Wells's patients, by a tight binder, a roller around the abdomen, and, if the stomach is not irritable, by the administration of piperine, extract of nux vomica, and belladonna. For the fourth variety, or twisting of the alimentary tube, and the fifth, obstructions from mechanical causes outside the alimentary canal, our resources are very limited, and the means of relief hazardous.

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* In Gynæcological Transactions.

† Ovarian Tumors.

These means are the knee-chest position and injections of large quantities of hot water, puncture of the intestinal tube with the smallest aspirating needle and opening the wound, thus correcting the twisted condition or dislodging the canal from any confinement in which it may be placed.

In continuation of the subject of after-treatment of ovariotomy we must consider the more grave accidents and conditions to be met with.

How do these patients usually die? 1st, by shock and collapse; 2d, hæmorrhage; 3d, acute (traumatic) peritonitis; 4th, septicæmia, complicated or not, with tympanites.

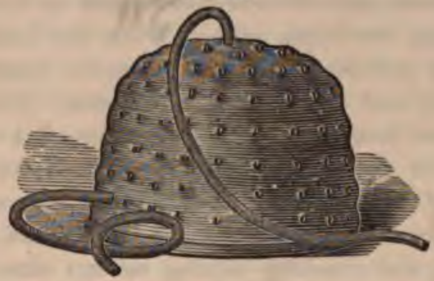
Shock or nervous depression is almost always manifested at the close of the operation, and is marked by paleness of the surface, feebleness, and generally quickness of the pulse, with great languor, and sometimes entire inability to move. The nervous depression passes into exhaustion, and death, in some instances, follows within a few hours; while in other cases the patient may linger in a state of depression for three or four days, and then die from no apparent cause except the continuation of the shock.

In the most profound cases of shock we should apply dry heat externally to as great a degree as the patient can bear, and keep her as still as possible, remembering that every movement adds to the exhaustion. The heat may be applied by a large number of hot bricks, stones, and irons.

They should be applied the whole length of the patient, to the feet, legs, trunk, arms, shoulders, and head, and at the same time the temperature of the room should be raised. Applications of heat to the head is of more importance probably than anywhere else, for stimulating the brain will often arouse the whole nervous system and dispel the symptoms.

The most effective way to do this is by using Thornton's (or its modification) cap, and passing hot water through it instead of cold. Plenty of warm covering will be necessary, of course, and if the stomach is not irritable the patient should drink as much hot water as she can. I am quite sure that the vigorous application of heat in this way is much more effective than alcoholic or other medical stimulants. These, however, may be added and administered by the stomach, rectum, or hypodermically. If the depression succeeding the shock should last and be threatening in degree the heat should be continued; nourishment and internal stimulants administered perseveringly until reaction is established.

FIG. 164.



Modified Thornton Cap.

Hæmorrhage

Is said to proceed from the following different sources: 1st. From the pedicle in consequence of the imperfect application of the ligature, or the retraction of the tissues included in its grasp, so that it becomes loosened. 2d. From wounded surfaces left by the separation of adhesions. This last is not often fatal as a hæmorrhage, but it may become so in rare instances. The blood derived from this source is however apt to decompose and cause septicæmia. 3d. From rupture of a plexus of veins near the ligature or elsewhere in the pelvis. Dr. Peaslee lost a patient from hæmorrhage, and on a post-mortem examination found that it proceeded from this source. He also speaks of others. 4th. In certain conditions of the blood predisposing to hæmorrhage, the blood from the inner portion of the incision finds its way into the abdominal cavity in considerable quantities.

I met with an instance where hæmorrhage from the wound immediately under the skin, the blood escaping outside, gave me a great deal of trouble. In this case the blood was so changed that coagulation did not occur after standing ten hours, and astringents locally applied failed to stop the hæmorrhage, and the only way it was arrested was by putting pins through the lips of the wound half an inch apart, and plugging the wound tightly in the interspaces. 5th. From an artery perforated by a needle used in closing the wound (Wells). 6th. From the patulous extremity of the Fallopian tube.

In all of these conditions hæmorrhage may follow the operation immediately or occur any time during the convalescence. Succussion from coughing, straining to vomit, moving about too much, mental excitement, may all contribute to start up hæmorrhage when the predisposing conditions exist. When the hæmorrhage takes place from the pedicle or ruptured veins, the symptoms generally appear suddenly and are marked in character. They need not be enumerated here, because they are so familiar; but where the hæmorrhage goes on slowly from abraded surfaces the symptoms are sometimes very obscure. Increasing rapidity and weakness of the pulse, paleness of the face, coldness of the extremities, profuse perspiration, nausea, and vomiting coming on any time after the first twelve hours when not preceded by evidence of shock, are symptoms which point strongly to this accident.

When the symptoms of hæmorrhage become marked, there is but one sure way of giving the patient a chance for her life, and that is, to open the wound, explore for the course of the hæmorrhage, and ligate the vessels or bleeding points when found. The abdomen should be very carefully cleansed of the blood.

Judging from the experience of Clay, Wells, Koeberle, and Atlee, this second opening of the abdomen is reasonably safe.

Traumatic Peritonitis.

Peritonitis, caused by opening the abdomen, judging from my own observations, as well as the reports of others, is not very common, and has become less so since the antiseptic vapor and dressing have come into so general use. At a time when our experience was small, compared with what it now is, this was the most feared of all the consequences of the operation. This fear was founded upon the well-known fact of the fatality resulting from accidental peritoneal wounds.

Fortunately, however, the peritoneum, in cases requiring ovariotomy, has lost much of the susceptibility to inflammation which it possesses in a healthy condition. The long-continued distension, friction, and frequent inflammations, to which it has been subjected, so modify its structure as to greatly alter its appearances, and in almost all instances to reduce its tendency to inflammatory processes very much. Hence we expect oftentimes to escape this very dangerous affection. When it does come, it makes its appearance within the forty-eight hours immediately succeeding the operation. Its symptoms are pain, tenderness, and tumefaction of the lower part of the abdomen, frequent pulse, and elevation of the temperature. In unfavorable cases these symptoms rapidly increase until the abdomen is largely distended and very tender; the pulse rises to 130 to 150, or even 160; the heat increases as high as 106 degrees. Mental disturbances become a prominent feature toward the close. These cases often run their course to a fatal termination in two or three days from the beginning. The temperature and the pulse are the best guides to the intensity of the inflammation. When the former does not rise above 103 degrees, and the latter above 120 per minute, we may have a reasonable hope of recovery.

The objects in the treatment of this form of peritonitis are to curb the rapidity of the pulse, reduce the temperature, and control pain. Opium in large doses, commenced at once and continued to deep narcotism, will go a great way toward accomplishing all of these objects. I believe that this treatment, at the very inception, will sometimes at once break the force of the attack. After the first forty-eight hours, or even sooner, large doses of quinine may be added to the opiate treatment, when the opium should be slowly withdrawn and brandy substituted for it. The quinine, however, should be continued.

These remedies, quinine and brandy, arrest the waste which follows the first stage. With these, nourishment should be pushed to the capacity of the stomach and rectum. When there is vomiting, these remedies may be given hypodermically and per rectum. Ice and ice-cold water may be allowed as desired, according to the craving of the patient. Thornton's cap will be of great service in these cases also, as the cold water circulating through it will greatly reduce the general temperature. A question of great importance is, What applications shall be made to the abdomen? In the first two days, if the temperature is high, I should have no hesitancy in applying cold by means of the water-bag; but I should promptly change from this to warm applications after the stage of effusion had passed, about the third day of the disease.

Septicæmia.

This is another of the formidable and fatal sequences of ovariotomy. As the operation is now performed,—that is, with antiseptic precautions,—it may generally be avoided.

The cause of septicæmia is the retention, decomposition, and absorption of fluids from the sac or sacs of the tumor, or from extravasated blood. The observations of numerous operators have established the fact that the retention of these fluids does not always result in septic fever, because they do not always undergo decomposition; especially is this the case, as before intimated, if the antiseptic precautions have been faithfully and sufficiently carried out. When it does occur, it may follow the reaction which succeeds the protracted depression of shock; but when not occurring in this way, it comes on in from four to seven, and even ten, days after the operation. Its course is variable, terminating sometimes in five or six days, especially when complicated, and this, I think, rather a frequent thing with peritonitis; while in the simple form it may last for ten or twenty days, or even longer, before wearing the patient out or merging into convalescence.

The prognosis, although bad, is not absolutely desperate. Sometimes the attack is sudden, inaugurated by a chill, and succeeded by a rise of temperature and accelerated pulse; or it may be established in a very gradual manner, the pulse and temperature rising slowly. They are generally both much higher in the after-part of the day. Derangement of particular organs is not uniform. The skin, sometimes dry and hot, is often bathed in a copious perspiration, the perspired fluid being sometimes very thin and watery, and again quite viscid and sticky. The stomach may or may not be disturbed, but generally the rest of the alimentary canal is more or less irritated, and diarrhœa, with profuse, thin, stinking stools, is often a marked feature of septicæmia. Nervous excitement and delirium, or somnolence and apathy, form parts of the symptoms in different cases. In many instances great tympanites, with or without peritonitis, add to this mischief. In the course of the disease, the circulating fluid sometimes becomes decomposed to such an extent as to pass easily out of the capillaries, giving rise to maculæ, blebs, and bullæ, or appearing in the urine or dejecta from the bowels, or exuding from the exposed mucous membrane in the mouth or nostrils. More frequently, however, the disease runs its course rapidly when a very quick pulse, from 120 upward, high temperature, from 104 degrees upward, delirium, excitement, or somnolence, and apathy constitute the important and noticeable symptoms. In either the slow or rapid case the stomach will not digest the food taken, and the lacteals will not absorb the material exposed to their action. Sanguification is arrested, and the scorching temperature is maintained by combustion of the material in the blood, which ought to sustain the vital functions. The patient is soon exhausted under this rapid waste, being incapable of appropriating anything with which to supply the deficiency.

Treatment.

The most important item in the treatment of septicæmia arising after ovariotomy is to remove the cause. This, as has already been said, is decomposing substances in the peritoneal cavity. In almost all cases the decomposing substances, serum, blood, etc., gravitate to the bottom of the cul-de-sac of Douglas, where we can reach it. The fluid can usually be detected per vaginam, but sometimes the quantity is so small as not to be appreciable by such an examination. In either case we should open the peritoneal cavity through the vagina, introduce a drainage-tube, and wash out the pelvic cavity with warm carbolized water. We may open the peritoneal cavity by means of scissors. The patient may be turned upon her side, Sims's speculum introduced, and the posterior wall of the vagina lifted up by a hook and perforated. The opening in the vagina should be in the median line as nearly as possible. The incision should be large enough to admit a good-sized tube. Through this the fluid will escape, and we may throw carbolized water into the pelvis. We may also perforate the posterior vaginal wall with a trocar. This may be done very easily when the quantity of fluid is considerable and the retrouterine pouch well distended. If opened in this way the first washing may be done through the canula before it is withdrawn, after which a tube should be passed through the canula, and as the latter is withdrawn the former is retained, or we may remove the two lower stitches and introduce the drainage-tube through the lower end of the wound.

The cleansing of the abdominal cavity will require repetition in proportion to the amount of decomposing materials. Of course no one would think of performing this operation until septic fever is evident. When this is the case the risk of evacuating the fluid and cleansing the pelvic cavity ought certainly to be considered a necessity, and when indicated it is worth more than all the remedies we can bring to bear in the treatment. The rest of the treatment has for its object the relief of symptoms, preventing waste, and introducing as much nourishment as can be borne by the stomach, rectum, or both, and hypodermically.

Probably the most important symptom to be attended to is the high temperature. This may be combated by cold externally applied or administered internally. Cold can be very effectually applied to the head by means of the ice-cap invented by Mr. Thornton, of the Samaritan Hospital. It is very highly recommended by Mr. Wells. It is a coil of rubber tubing so arranged as to fit the head like a cap, and when applied to the head the tube is filled with ice-water, and one end is placed in a bucket of ice-water very slightly elevated above the head of the patient, while the other end is passed into a tub under the bed or elsewhere.*

By elevating and depressing the two ends of the tube the water may be made to run more or less swiftly through the portion forming the cap as we may desire. If this cap cannot be commanded, india-rubber bags filled with ice-water, or a large beef's bladder, or ice inclosed in rubber cloth or oiled silk may be substituted.

Cold may thus be applied with sufficient intensity to lessen the heat of the entire body in a very short time, and I think is very much to be preferred to any general application of cold however made.

Quinine administered in large quantities is very efficient in reducing temperature and preventing waste; so also is alcohol. Five grains of quinine every four hours, or ten grains every eight hours, is the proper dose. Brandy in ounce doses every two hours may be given for a like purpose. If tympanites or peritonitis, or both, complicate the fever, there are local means for their treatment, as elsewhere detailed.

Remarks and Personal Statistics.

I am among those who believe in antiseptic surgery. My operations date back to 1861, when everything in connection with ovariotomy was in an unsettled state. It is true that there is not perfect accord among ovariotomists at the present time, but we have had a great deal of experience in different methods of procedure, in the several steps of the operation and after-treatment, and can consequently more intelligently estimate them; and I think it safe to say that the antiseptic process has about done away with the clamp and primary drainage; in fact, both of them are incompatible with a complete antiseptic dressing.

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* See modification of it on page 659.

My convictions as to the benefit of the antiseptic processes in ovariotomy are grounded upon my own experience more than general statistics, although I think the latter are sufficiently convincing.

I have only operated eighty-two times, and in accordance with the experience of other ovariotomists my success grows with the number of my operations. Before I commenced the use of the antiseptic spray and dressing my successes, taking the whole together, did not exceed sixty-six per cent. Since I have been operating as I now do I have had about eighty-six per cent. of recoveries. The general conditions are, it is true, somewhat more favorable now than before, and may have had something to do with the favorable termination of my cases. Of the twenty-two cases operated upon antiseptically, eighteen operations were performed in a small hospital (Woman's Hospital of the State of Illinois), surrounded by every favorable circumstance at our command. The three deaths all occurred in the hospital. The other four cases were in small cities in this State. Whether the improved circumstances would have been sufficient to give the more favorable results than formerly without the antiseptic measures, I am of course unable positively to assert. Neither can I say how much may be due to increased skill acquired from experience in operating. The number of cases I know are also too small to base conclusions upon. While there has been a very marked change for the better since adopting the antiseptic method, I think my mind has been influenced in coming to a conclusion favoring antiseptic practice by the appearance of the wound. So far as the wound is concerned there is no question about the effects of the dressing. When properly managed there is no smell, no pus, and no ulceration. It heals without any evidence of decreased vitality in the part. In expressing my belief in the efficacy of antiseptic processes in surgery I do not announce any opinion of the *modus operandi*. I am not sure that there are septic particles that fall upon and induce ferment in the wounded parts, or living germs or ova that infest, breed, and diffuse themselves in such numbers as to destroy the vitality of the points of attack, and gaining access to the vessels disintegrate the circulating fluid so that it is not fit to support the vital forces, and that the carbolic acid operates by consuming these deleterious particles. But I do believe that the vapor and fluid containing this substance when used so as to shut out the atmospheric air from the abdominal wound adds greatly to our means of avoiding one if not more of the untoward conditions sometimes experienced after ovariotomy.

CHAPTER XLIV.

FALLOPIAN TUBES.

THE Fallopian tubes are sometimes absent; this is the case generally when the uterus is absent. But, according to Rokitansky, they are not always wanting when the uterus is. One, or even both of them, may be wanting when there is no other fault in the genital organs. Occasionally they are met with of diminutive or rudimentary size. They are also deformed, having two sets of fimbrillæ, one at the end and the other nearer the uterus, with openings at both places; or bifurcated, the branches entering the uterus at different points. Or one may be longer than usual, and enter the cervical portion of the uterus as mentioned and described by Pole, and quoted by Scanzoni. They are often displaced with the uterus and with the ovaries, and, with the latter organs, are found to enter into the formation of a hernia.

Inflammation of the Fallopian tube is, probably, not an unfrequent affection, but almost always it is but a small part of the disease that exists in its locality; inflammation of the uterus, peritoneum, locally or generally, and ovaritis being separately or collectively connected with it, and by their symptoms making the manifestation of disease in the tubes. In such cases it is not only impossible, but is of no importance, to diagnosticate salpingitis. If the diagnosis could be made, it would not influence the treatment. Involved, as they are, in the inflammation of surrounding organs, they are occasionally destroyed by suppuration, or constricted by bands of fibrin, and the tubal cavity is obliterated by exudations. They also are the subjects of catarrhal inflammation, discovered after the death of the patient, associated with endometritis, seldom as an independent affection.

The tubes are doubtless the channel through which inflammation of the uterus finds its way into the peritoneal cavity, and also the conduit for fluids—pus, blood, mucus, etc.—from the uterus to the peritoneal cavity. As they are not seldom found dilated so as to admit a uterine sound to pass them,—Hildebrant, Mathew Duncan, Thomas Budd, and others, have seen and diagnosticated dilatation of the Fallopian tube during life,—we need not be surprised at the transition of fluids through them in both directions. Thus the serous contents of the peritoneal cavity may be passed into the uterus and vagina. The reader will not fail to see the importance of diseases of the tubes, on account of the sterility that would result from obliteration or constriction of them, or the danger from a too free communication between the peritoneal sac and the uterine cavity.

Cancer of the Fallopian tubes is not often observed independent of the existence of the same disease in the surrounding tissue. They are generally though necessarily involved in cancerous degeneration of the ovary and the uterus.

Hypertrophy and *atrophy* of them accompany the same changes in the uterus. They are enlarged when the uterus is by tumor, inflammation, congestion, or pregnancy, and become atrophied as the uterus diminishes in size, in old age or from any other cause. *Dropsy* of the tubes is occasionally observed. Obliteration of the cavity near each extremity leaves the portion of the tube between these points free to receive exudation from the lining membrane, which cannot find its way out. The fluid accumulates and fills the isolated portion of the tube, which continues to increase until it becomes a cyst from the size of the finger to that of an orange, and perhaps even larger.

Dr. C. S. Ward presented a specimen to the New York Obstetric Society of double tubal dropsy, the size of a pullet's egg. August, 1871, *Journal of Obstetrics.*

We also meet with small serous cysts attached to the fimbriated extremity of the Fallopian tube. They are usually small cysts, distended by serum, scarcely ever exceeding the size of the finger's end.

CHAPTER XLV.

COCCYGODYNIA, COCCYALGIA.

Neuralgia of the Coccyx.

THESE terms are used to denominate one of the several peculiar neuroses of the pelvic organs, especially those situated at the bottom of the excavation. It belongs, I think, clearly to the same class of cases as vaginismus, urethrismus, spasm of the bladder, rectum, etc., and is purely a nervous affection.

They are all peculiar hyperæsthesias, and sometimes have a demonstrable basis of excito-motor origin, as fissures, ulcers, inflammation, etc., while in other instances there seems to be no material change in any of the organs.

That coccygodynia, like vaginismus, is often associated with uterine disease, disease of the rectum, bladder, urethra, etc., is certain from observation. Whether these more common affections, after continuing a long time, may excite the nerves into a state of instability that becomes permanent or not, is a question worth asking in this connection. In common with other nervous affections having a reflex origin, may not the *symptoms* become a disease, and remain an independent affection after the excito-reflex cause has been removed? The irritation so protracted and unremitting I think may and often does induce organic change in the nerves or the subordinate centres with which they are connected, and thus perpetuate the symptoms.

Structure Affected.

There was, in all cases I have examined, room to doubt the exact tissue affected, whether in the periosteum, interosseous ligaments, muscles, or nerves.

Symptoms.

Pain on moving the coccygeal bone, in sitting down, rising up, passing the fæces, coughing, sneezing, walking, or standing. In bad cases the patients are not able to sit, stand, or walk without great discomfort, and are so pained by the sitting or erect posture that they are confined to recumbency.

They thus lose their general health and become permanent invalids.

This is very rare, however, and the most of the cases we meet with are in patients who enjoy a tolerable state of general health, but are continually annoyed by everything that causes contractions of the muscles inserted to the coccyx or closely connected with them. They sit on one side of the buttocks or on cushions that remove the pressure from the coccyx. They rise to the standing position with great care, and must be very guarded in walking, coughing, or sneezing, etc.

Diagnosis.

This is made by considering the history of the case and by physical examinations. The finger passed into the vagina or rectum, and pressed backward upon the coccyx, so as to move it, gives the patient great pain. Pressure exerted upon the posterior surface, with sufficient force to move it, causes even greater pain. When the disease is severe the suffering is so great that it is with difficulty we can examine the coccyx as to its mobility.

Dr. Jenks says that when a patient is examined under the influence of ether the muscles connected with the coccyx are relaxed, while they are very strongly contracted when the patient is not etherized.

Prognosis.

There seems to be very little tendency to spontaneous subsidence of coccygodynia.

The menopause does not affect it as it does most of the pelvic diseases, and it is often a long time after the change of life before the patient recovers. It occurs in the young nulliparous and parous women alike, but not in the senile. It generally causes more suffering in women who are bearing children.

Treatment.

The palliation of the symptoms in coccygodynia consists in the use of anodynes and tonics, the former to relieve the great suffering for the time. They may be used in suppositories per rectum, per vaginam, or hypodermically. We can add greatly to the comfort of the patients also by contriving cushions or easy chairs for them.

A tonic or roborant course of treatment will sometimes brace up her nervous system so that the patient can bear her ills without breaking down physically. Among the means to accomplish this end, when the patient is not too bad, travel is of great service, a change of climate from hot to cold in the summer, and from cold to warm in the winter. Quinine and iron administered internally, with liberal and systematic feeding, contribute to the same purpose.

In the earlier periods of coccygodynia we may hope to arrive at a cure by searching for and removing all disorders in the neighborhood, founding our treatment upon the idea of removing the excito-reflex centre of disturbance.

Dr. Robert Barnes, of London, believes that it is caused by retroversions of the uterus. Anal fissures, hæmorrhoids, ulcers in the rectum, should command our special attention if they exist, and every pains should be taken to restore all deviations from general health.

After the disease has existed long enough to become an independent affection, probably nothing short of a surgical operation will result in a cure.

To the late Dr. Nott belongs the credit of first describing this disease and devising a surgical operation for its cure. He called it neuralgia of the coccyx, and, after trying all other measures that occurred to him, extirpated the bone. His operation consisted in cutting through the attachments of the bone on each side, from the base to the apex, everting it and dislocating it from the sacrum.

This may best be done by incising the integument in the central line, and raising and turning aside the flaps until both margins of the bone are exposed. The next step is to cut carefully down through attachments at the point of the coccyx and introduce a blunt-pointed bistoury, or the point of scissors, and separate the attachments upward to the base on both sides. The bone can then be lifted up and turned backward to expose the articulation, which may be divided by a bone forceps or a strong knife. The loose cellular tissue, on the inner surface of the bone, easily gives way as it is lifted from its bed, or may be divided by the knife.

There is generally very little hæmorrhage, and the bleeding will in a few minutes subside. All that remains to be done is to close the wound by replacing the flaps and joining them by four or five stitches.

This is neither a dangerous nor a difficult operation, and is very effective in a curative point of view.

In 1858 Professor James Y. Simpson, apparently with knowledge of Dr. Nott's description of the operation for this affection, published in the London *Medical Gazette* his lectures on the diseases of women, in which the disease is recognized and his operation described. His operation consists in the subcutaneous division of the connections of the bone without removing it.

CHAPTER XLVI.

ELECTRICITY.

ELECTRICITY has been used in the treatment of diseases of women, and with considerable success. All forms have been used, viz., *static*, *galvanic*, and *faradic*. Static electricity may be conveniently obtained by Holtz's electrical machine. The prime conductor furnishes positive and the rubber negative fluid. The modes of application are various. Sparks may be sent directly through the tissues, or the patient may be insulated and be filled from either electrode, when sparks may be drawn through the part affected by presenting to it a metallic conductor. A surface thus acted upon will present points of irritation. In chronic ovarian difficulties such an application would be suggested.

Galvanic electricity is best obtained from the galvanic machine, which may contain any number of cells, made of zinc and copper, or platinized silver or carbon, and a proper fluid to excite chemical action. Upon the latter will depend the quantity of electricity, while its intensity will depend upon the number of elements undergoing chemical action. Of galvanic batteries there are many forms. One that is constant and easily kept in order is desirable.

Faradic electricity differs from both the *static* and *galvanic* in this, that the faradic current is induced, and is a to-and-fro current, going both ways. Its tension is also greater, and current is broken slowly or rapidly as one desires by the rheotome of the electro-magnetic machine, from which the current is derived. It differs from the galvanic current in this, that the latter is unbroken, that is, it is a constant current.

In using electricity a few things are necessary: first, proper instruments, and a knowledge of a few simple facts. A moist surface or tissue is always a better conductor of the fluid than dry tissue or a dry surface.

The most succulent tissues present the least resistance to the current. Thus, for instance, bones and nerves are poorer conductors than the muscles, and a dry skin will resist the current still more. In view of this fact, we wet the electrodes before applying them to the skin.

The galvanic current, by reason of its constancy, is the most penetrating form of electricity. It is also the most diffusive, for its presence is often discernible at points not between the electrodes. Of late we have heard much of electrolysis. What is it? If we place the poles of a galvanic battery near one another in a basin of water, bubbles will appear, due to the decomposition of the water by the current. This action is called electrolysis. We need only attach the wires to insulated needles and pass them into fluids within the body to decompose them also. We may thus decompose the tissues of the body, and in the process the alkalies will appear at the negative and the acids at the positive pole.

Electrolysis then is the decomposition by electricity of either fluids or solids. After being thus acted upon these elements are supposed to undergo absorption. Electrolysis of ovarian cysts has been successfully practiced. Dr. Frederick Semeleder, of Mexico, claims to have thus cured the disease. His enthusiasm led to the publication of the facts in 1875, and to the premature assertion of "no more ovariotomy." In 1874, Fieber, of Vienna, reported two successful cases by this method, which, however, seems to have been original with Dr. J. F. Bühring, who announced it in 1848. The method has been well tried in New York, and unsuccessfully (*Gynæcological Transactions*, vol. ii, 1877).

The method necessitates the introduction, through the abdominal wall, into the cyst of one or more needles for the conveyance of the current. This simple procedure may permit of subsequent leakage, peritonitis, and death, and is especially dangerous in multilocular cysts. The method, notwithstanding it may cure unilocular cysts, is scarcely less dangerous than ovariotomy at the present day. The method is seriously objectionable in practice, inasmuch as it is not always possible to say positively that a cyst is or is not multiple.

For solid fibroids of the uterus these objections are not applicable, and the mere introduction of proper needles is tolerably safe. Dr. Ephriam Cutter, of Boston, has thus treated uterine fibroids successfully.

If the electrical current is passed through a wire, platinum for example, which offers considerable resistance, the current will raise the temperature of the wire even to a white heat. This is a simple galvanic cautery. With it we may cut away tissues or divide them. The electro-cautery has been found very useful for the removal of the cervix when the site of malignant disease. It is an admirable method of removing uterine polypi.

An exhaustive paper on this subject by Dr. John Byrne may be found in the *Gynæcological Transactions*, vol. ii, 1877. The same gentleman uses the electro-cautery for kolpocystotomy, burning an opening in the base of the female bladder where drainage is desirable. See a paper on the subject, *Gynæcological Transactions*, vol. iv, 1880. The advantages of surgery done in this way, are that there is less risk of hæmorrhage, and openings are not so liable to heal up rapidly. The disadvantages are the time consumed, the uncertainty of batteries, and the fuss.

The physiological phenomena produced by electricity vary with the kind used, also with the quantity and tension, also with the position of the poles, and also as to the tissues acted upon. Ascending currents excite as they reverse the natural nerve current. Descending currents soothe as they flow with the nerve current. The former affect the sensory nerves, while the latter affect specially the motor nerves. Upward currents increase reflex action, while downward currents diminish it.

A constant current passed through a muscle produces contraction, from the positive toward the negative pole, and drives the blood in the same direction. Reverse the position of the poles, and the contraction of tissue is in the reverse direction and circulation is retarded. If you occasionally break the current by any method, you shock the muscle, give it a spasm, the bloodvessels also contract and the blood is propelled forward and diminished momentarily in the muscle. But observe, the muscle has been exercised. If instead of breaking the galvanic current you apply the faradic, the result is the same. The galvanic and faradic currents are tonic. They exhilarate, raise the temperature, increase the circulation of the blood and enliven the brain. They produce sleep, increase digestion and appetite. When locally applied they increase the nutrition of the part.

Descending currents act on the motor nerves, contracting the muscles, but give pain by their action on the sensory nerves. Ascending currents excite the spinal cord and increase reflex functions. By these currents, applied by electrodes, we may increase or diminish the blood in a given part, exercise the muscles, singly or in groups, and excite the sensory nerves. By these currents constipation may be relieved. The circulation may be equalized, and hysteria, melancholia, dyspepsia, and other symptoms of nervous exhaustion, so common in women, may be successfully treated by general electrization.

As already intimated the muscles under the influence of the faradic or broken galvanic current may be increased in size and strength. Hence for production of passive motion we find it an excellent agent. As a direct result of the tonic influence of electricity the disposition and capacity for mental labor increases. The lack of concentrativeness and the loss of memory in nervous exhaustion rapidly disappear. Such symptoms as leucorrhœa, amenorrhœa, dysmenorrhœa, and purely functional menorrhagia accompanying nervous exhaustion may be successfully treated by electricity. It gives tone to the walls of the bloodvessels, improves the important functions of the body. The remedy may be used generally over the body, locally or in both ways. If given locally the external or internal application may be selected, as the character of the case requires. If given locally, one pole may be placed over the spine and the other over the hypogastric region, or one pole may be placed against the cervix or in the cervical or uterine cavity. Currents thus given are well borne and often productive of much good. Subinvolution of the uterus, especially when not the result of laceration of the cervix, may be treated by this method; one electrode may be introduced directly into the uterus. The contraction of the uterus thus produced relieves congestion of the organ, and changes are brought about which favor the absorption of the superfluous tissue. Doubtless some such rationale led Simpson to use the galvanic stem pessary. The use of electricity for the cure of nervous exhaustion is somewhat general. But when combined with massage, rest, seclusion, and overfeeding, according to the method of Dr. S. Wier Mitchell, the results are often but little short of miracles.

To produce uterine contraction, to arrest bleeding, to empty the uterus of a body loose within its cavity, the faradic current will be found reliable. One pole may be placed upon the spine and the other over or against or within the uterus itself. As an adjunct in the treatment of gynæcological cases electricity is often a good remedy.*

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* This chapter was written at the request of the author by R. Stansbury Sutton, M.D., of Pittsburgh, now lecturer on Gynæcology in the Spring Course of Lectures in Rush Medical College.

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